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AN ARCHEOLOGICAL SURVEY IN THE GYPSUM BREAKS ON THE ELM FORK OF--ETC(U)
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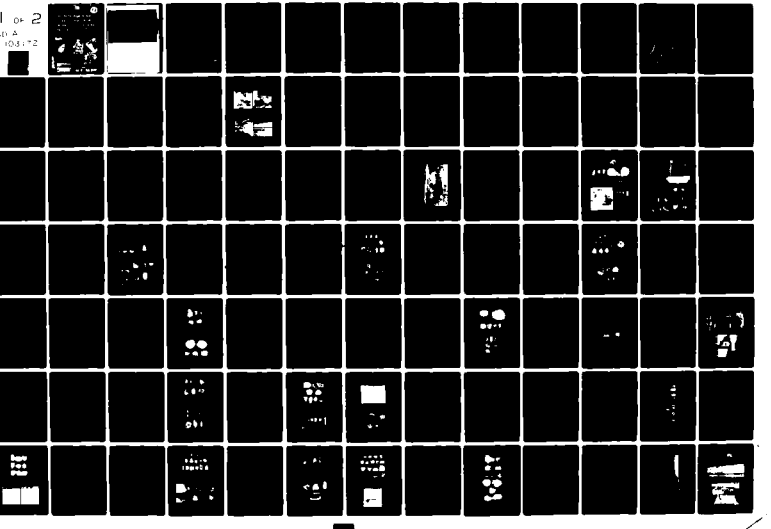

An Archaeological Survey in the Gypsum Breaks on the Elm Fork of the Red River

by John D. N[illegible]

ERRATA SHEET

Page 11, 4th paragraph, line 4: should read, "Since the region around the project area has such sites and unchecked reports..."

Page 18, 1st paragraph, line 5: should read, "...and quite different from Euro-American dugouts."

Page 33 and 68, site description 34-Gr-77 (5): These two site descriptions are for the same site, repeated by mistake. The distance estimates given on page 68 are the most accurate.

Page 63, 4th paragraph, line 1: should read, "This site was a quarter acre area with concentrations of historical debris,..."

Page 85, 4th paragraph, line 1: should read, "This site covers approximately 20 acres on the low edge of the Elm Fork flood plain,..."

Page 95, 4th paragraph, line 4: should read, "The four highest percentages of each major lithic type by sites are as follows:"

Page 97, 2nd paragraph, line 1: should read, "Over twice as many sites..."

Page 98, Table 5 entries under the column of Size/Acres should be changed for three sites as follows:

Temp. Number	Permanent Number	Size/ Acres
3.	34-Gr-73	$2m^2$
5.	34-Gr-77	$3m^2$
22.	34-Gr-88	1/4

AN ARCHEOLOGICAL SURVEY IN THE GYPSUM BREAKS ON THE ELM FORK OF THE RED RIVER

by
John D. Northcutt

Submitted in partial fulfillment of
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Corps of Engineers, Tulsa District

Contributions of the
Museum of the Great Plains
Number 8
Lawton, Oklahoma
1978

Abstract

This report describes a cultural resources survey on the drainage of the Elm Fork of the Red River covering 1,705 acres in Greer and Harmon counties, Oklahoma. Thirty-two new prehistoric and historic sites were found during this work and four sites already recorded were resurveyed. Five of these thirty-six sites were given a minimal test with seven 1 meter square test pits. Site locations, site functions, age, artifacts, and cultural inferences are described and discussed based on the materials recovered. Most sites were small and lie on badly eroded Permian and Quaternary badlands topography, and are not considered significant enough archeologically or historically to warrant further action. Specific recommendations are made on the few sites considered valuable in solving problems of archeological research in southwestern Oklahoma.

Acknowledgments

Several people were of great assistance in completing this project and without whose help progress would have slowed to a crawl. Archeologist Sue Purves with the Army Corps of Engineers helped obtain maps and other information that greatly improved the quality of this report.

Mr. John C. Birdwell deserves a special note of thanks for allowing two archeologists to wander about on his land and not lose his temper when being hounded for keys to gates. Mrs. Ella Chisum also deserves thanks for allowing the survey and test pits to be carried on without delay. The consideration of these two landowners allowed the survey to continue on schedule.

Mr. and Mrs. Lawrence Le Vick were extremely generous in showing their collections and sharing ideas on flint typology. Ranger Wesley Webb is also to be thanked for the information he provided on the flora and fauna of the area, and for allowing his collection to be measured and photographed.

The cooperation offered by Dr. Jack Hughes in obtaining maps and information speeded operations considerably. The help of Richard Drass and other staff at the Oklahoma Archaeological Survey was essential in determining which sites were already recorded.

The whole staff at the Museum of the Great Plains offered a wide variety of support and discussion. Deanna Patterson served ably and well as project typist. Bette Franken did all of the dark room photography, and offered many helpful comments. Jean Griffin drew the maps and figures. Mrs. Sue Josey worked many tedious hours processing artifacts with the dedication of a trooper. Raymond Scott sweated many long afternoons under an August sun in rattlesnake country surveying a desolate landscape, without one complaint. His efforts in juggling a schedule of commitments in order to complete the fieldwork are greatly appreciated.

The most important aid and advice came from Towana Spivey, Curator of Anthropology at the museum, who was always available for comment on any subject from a minor equipment problem to a major theoretical issue. He served as a stable sounding board for work on the archeological problems in Southwestern Oklahoma.

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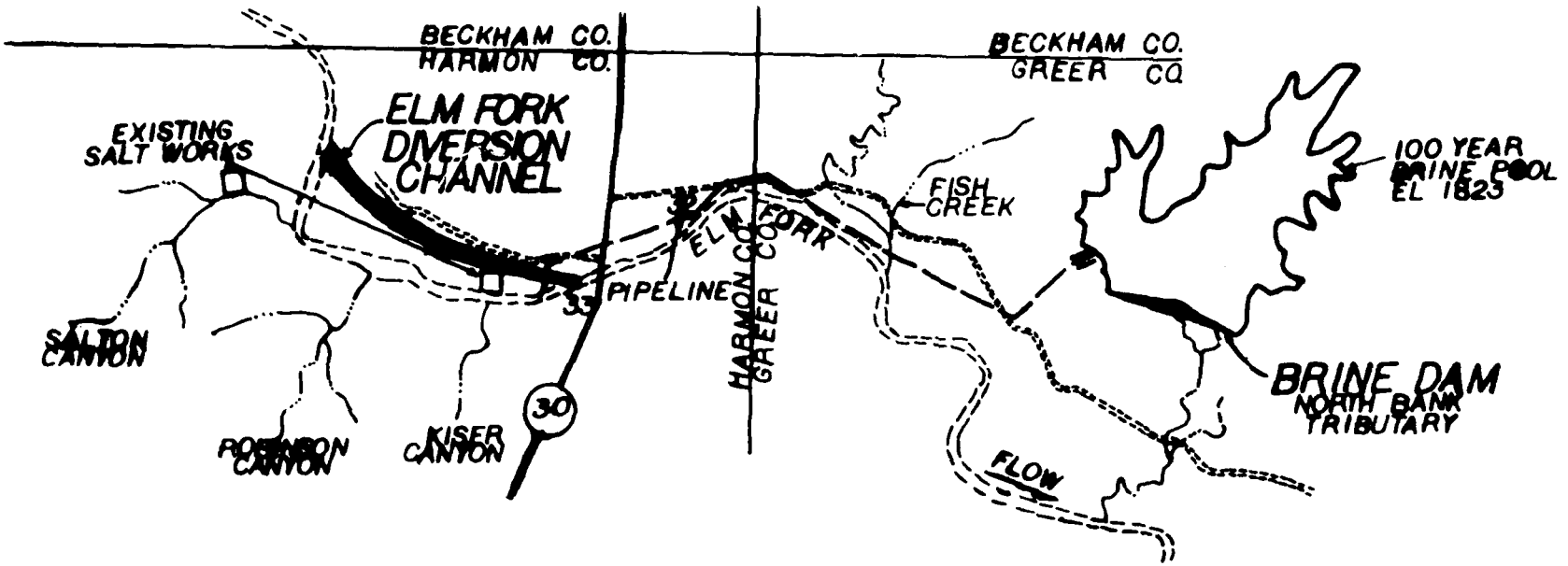
Introduction

In August, 1978 the Army Corps of Engineers awarded a contract for a cultural resources survey of Chloride Control Area VI, in the southwestern edge of Oklahoma, to the Museum of the Great Plains. This project included the land impacted by a proposed brine lake of 1,250 acres, and the land impacted by the connecting pipeline and dike to rechannel a portion of the Elm Fork of the Red River. The total land area to be surveyed was 1,815 acres (See Fig. 1).

The primary objectives were: (1) to locate all cultural resources in the impacted area, (2) to define these resources as completely as possible in size, function, age, depth, and cultural relationship, (3) to evaluate each resource as to the importance of the data it contained, (4) to estimate the impact of the proposed project upon each resource, and (5) to recommend action on the loss, avoidance, mitigation, or nomination of sites to the National Register.

Starting in August the survey work was accomplished in five weeks of fieldwork by a two man team of archeologists, Raymond Scott and the writer. Thirty-two new sites were discovered and four previously recorded sites were resurveyed. Three of the known sites were found in a previous survey by Dr. Jack Hughes (1973). One of the known sites was reported by James Shaeffer in 1960. The Hughes survey was based on an earlier plan to dam Fish Creek, and he found several other sites further up the Fish Creek drainage that were not considered at all affected by the pipeline or dam on the North Bank Tributary of the present project. Only four of the sites already recorded were considered close enough to the impacted area to warrant further examination. These four sites were Hr-10, Hr-39, Gr-40 and Gr-41.

Due to difficulties in obtaining access to land in the last week of fieldwork, the present survey was revised slightly to exclude the western end of the dike area in Harmon county. This action reduced the total survey area to approximately 1,705 acres. During the final week of fieldwork, five of the most culturally productive and topographically diverse sites were minimally tested. All materials collected in the field were taken to the laboratory of the Museum of the Great Plains in Lawton, Oklahoma. This report describes and evaluates the surface collections and the material excavated from the test pits, and gives a limited analysis of the cultures and cultural patterns implied in these materials and artifacts.



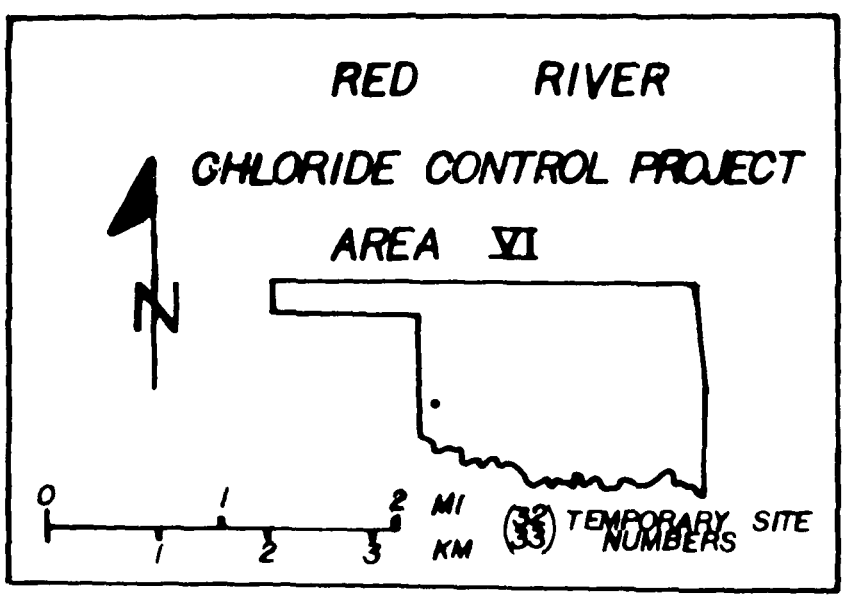


Figure 1: Red River Chloride Control Area VI.

Environmental Setting

Geology: The project area lies in the west edge of the Wichita Mountain uplift as defined by Johnson et al. (1972:1). This is part of the Wichita system that includes the Wichita Mountains in southwestern Oklahoma and runs west. This mountain range becomes totally subterranean when it reaches the Texas Oklahoma border, but continues underground beyond the Amarillo district in the Texas Panhandle and ends at the edge of the Rocky Mountains in southern Colorado (King 1977:77).

The immediate region of the project area lies in the "Mangum Gypsum Hills" which consists of gently rolling hills to steep bluffs and badlands developed on Quaternary gravels and Permian beds of gypsum and shale (Johnson et al. 1972:3). These Permian deposits are represented by 280 million year old beds from 1,000 to 4,500 feet thick made up of shallow marine, deltaic, and alluvial deposits of red sandstone, shale, and thick salt units (Johnson et al. 1972:4).

Topography and Hydrology: Most of the local area shows severe geologic erosion with exposed outcrops of red clay beds, shales, and gypsiferous shales and little or no top soil. The area of the proposed dam and lake lies in land officially classed as badland or rough broken land (Frie, Brinlee, and Graft 1967:sheet 14). A majority of the sites found in the 1978 fieldwork lie on these badlands and rough broken land sections. A few of the sites are on Vernon; Cottonwood-Acme, and Treadway soil associations. Generally the surface is very slowly permeable to air, water, and roots; and as a result nearly all rainfall runs off. In the proposed lake area this has resulted in many steep gullys and ravines.

On a regional scale the area of southwestern Oklahoma is drained towards the southeast into the Red River by the Washita, North Fork, Elm Fork, and Salt Fork rivers. The immedate project area is drained to the south into the Elm Fork of the Red River by two small streams, the North Bank Tributary and Fish Creek. The proposed lake of the project includes most of the drainage of the North Bank Tributary. Both of these streams contain water year round in the final mile or two above their mouths, but further upstream they become intermittent and are totally dry during long, hot summers. A general summary of the site topography will be given for each site in the site descriptions that follow.

Climate: The climate of the project area is best described by Frie, Brinlee, and Graft (1967:69):

> . . . subhumid, temperate, and continental. . . . Daily and seasonal changes in temperature, cloudiness, wind, and precipitation are often sudden and extreme. The seasons are well defined. They vary in severity from year to year, but changes between the seasons are gradual. Normally, winters are mild and sunny, and cold spells last only 2 to 4 days before southerly winds return. The most violent weather and greatest frequency of severe storms and tornadoes occur in spring.

The average annual temperature is 62 degrees F., and the average monthly temperatures range from 39.7° F. to 83.9° F. in January and July (See Fig. 2). During the period from 1930 to 1960, the average annual precipitation was 23.6 inches with extremes ranging from 10.8 in 1910, to 45.1 in 1923 (Frie, Brinlee, and Graft 1967:70).

Flora: The project area lies inside the biotic district called mesquite plains by Blair (1951:110), mesquite-short grass plains by Webb (1970:36), and mesquite grasslands by Duck and Fletcher (1943). The most prevelant plants reported for this ecotone are listed below. Those common names marked with an asterisk (*) denote species which were recorded ethnographically as being used by prehistoric tribes such as Kiowa, Comanche, Cheyenne, and Caddo (Bousman 1978:26-41).

Genus	Species	Common Names
Prosopis	juliflora	mesquite*
Juniperus	pinchoti	mountain cedar
Tamarix	gallica	salt cedar
Salix	nigra	black willow
Opuntia	lindenheimeri	prickly pear cactus*
Artemisia	filifolia	sand sage
Bouteloua	gracilis	blue grama
Bouteloua	hirsuta	hairy grama
Aristida	purpurea	three-awn
Gaillaridia	puchella	Indian blanket
Gutierrezia	texana	broomweed
Yucca	glauca	yucca*
Buchloe	dactyloides	buffalograss
Populus	deltoides	cottonwood
Ulmus	americana	American elm*
Bumelia	lanuginosa	chittamwood
Celtis	reticulata	western hackberry
Typha	latifolia	wide leafed cattail*

This is only a cursory list refined and compiled from several sources: (Blair 1939,1951; Parks 1937; Bruner 1931: and Webb 1970).

Fauna: Sources for the animals present in the mesquite plains ecotone were also compiled from several sources: Blair (1939); Hall and Kelson (1959); Sutton (1967); and Webb (1970). Extensive work on the analysis of bone material of species present at several Panhandle Aspect

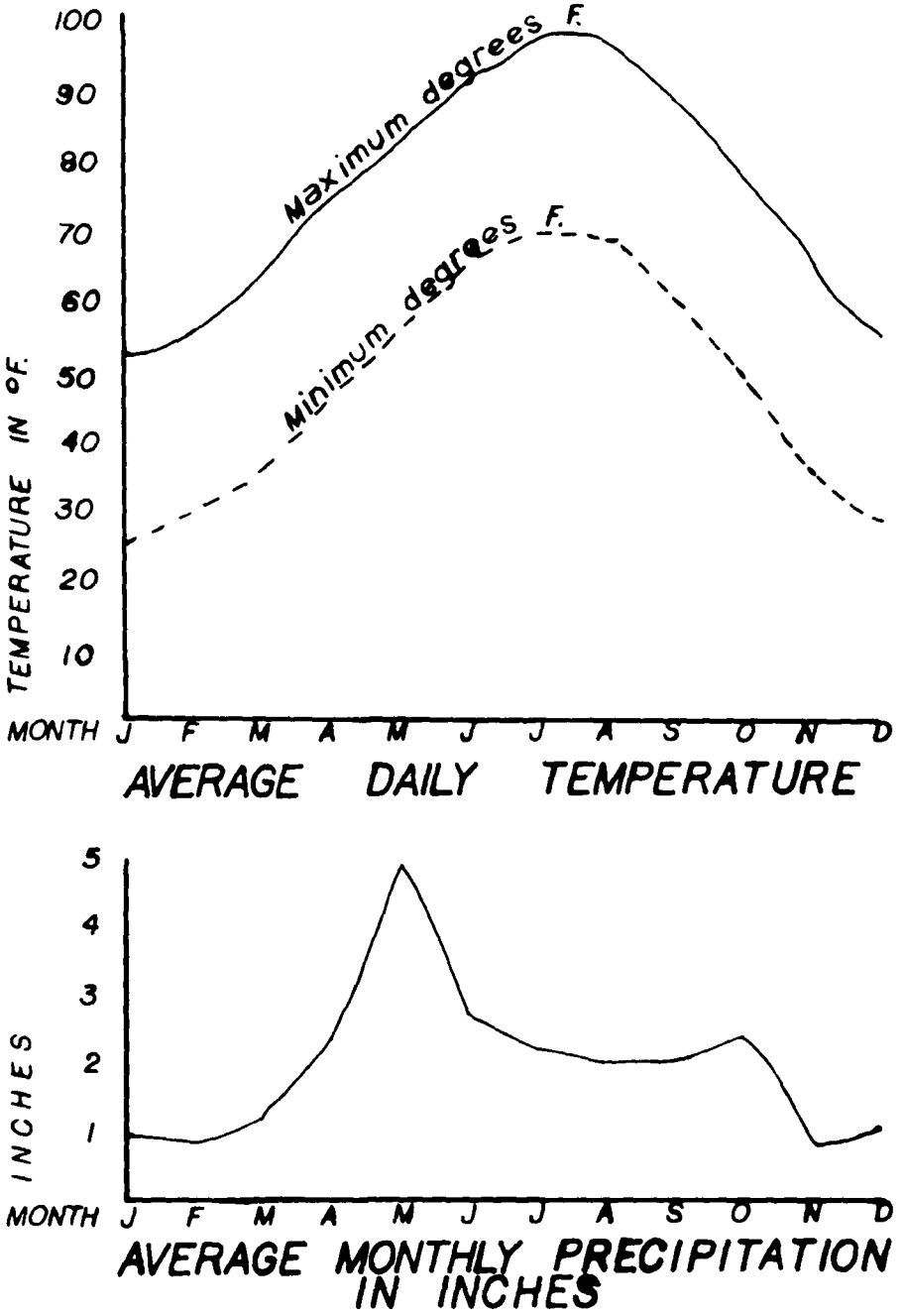


Figure 2: Average temperature and precipitation in Greer County from 1931 to 1960.

sites is included in the list below and any species found in the excavations at these sites listed by Duffield (1970) is marked by an asterisk (*). Species so marked may not occur in the mesquite plains today, although most still do. # denotes species observed by writer in 1978.

Genus Species	Common Names
Scalopus aquaticus	eastern mole*
Myotis velifer	cave myotis
Eptesicus fuscus	big brown bat
Lasiurus cinereus	hoary bat
Plecotis borealis	big eared bat
Tadarida Brasiliensis	Brazilian freetail bat
Procyon lotor	raccoon*
Spilogale putorius	eastern spotted skunk
Taxidia taxus	badger*
Vulpes velox	swift fox*
Canis latrans	coyote*#
Canis familiaris	dog*
Canis lupus	gray wolf
Felis concolor	mountain lion
Lynx rufus	bobcat*
Spermophilus spilosoma	ground squirrel*
Spermophilus tridecemlineatus	thirteen-lined ground squirrel
Cynomys ludvicianus	black-tailed prairie dog*
Geomys bursarius	Plains pocket gopher*
Perognathus flavus	silky pocket mouse
Perognathus hispidus	*hispid pocket mouse*
Dipodomys ordii	Ord's kangaroo rat
Castor canadensis	beaver
Onychomys leucogaster	Northern grasshopper mouse
Reithrodontomys montanus	Plains harvest mouse
Peromyscus maniculatus	deermouse
Peromyscus leucopus	white-footed mouse
Neotoma micropus	Southern plains woodrat
Ondatra zibethica	muskrat
Lepus californicus	black-tailed jackrabbit*#
Sylvilagus floridanus	eastern cottontail*
Sylvilagus audubonii	desert cottontail
Odocoileus virginiana	white-tail deer*
Odocoileus hemionus	black-tail deer* (mule)
Antilocapras americana	pronghorn*
Bison bison	bison*
Bos taurus	domestic cattle#
Ursus americanus	black bear
Cervus merriami (now extinct)	Merriam's elk

Reptiles (# mark denotes species observed by writer in 1978)

Chelydra serpentina	snapping turtle*
Terrapene ornata	ornate box turtle*
Trionyx mutica	spineless soft-shell turtle*
Trionyx spinifer	spiney soft-shell turtle*

Genus	Species	Common Names
Pseudemys	scripta	red-eared turtle*
Kinosternon	flavescens	mud turtle*
Cnemidophorus	gularis	whiptail lizard
Sceloporus	undulatus	prairie lizard
Crotaphytus	collaris	collared lizard #
Eumeces	obsolotus	great plains skink
Cnemidophorus	sexlineatus	lined racerunner
Holbrookia	maculata	earless lizard
Leiolopisma	laterale	ground skink
Phrynosoma	cornutum	Texas horned lizard
Arizona	elegans	Kansas glossy snake
Coluber	constrictor	yellow-bellied racer
Crotalus	atrox	western diamondback rattlesnake
Crotalus	viridis	prairie rattlesnake
Elaphe	guttata	great plains rat snake
Elaphe	obsoleta	Texas rat snake
Heterodon	platyrihinos	eastern hognose snake
Heterodon	nasicus	plains hognose snake
Hypsiglena	ochrorhyncha	Texas night snake
Leptotyphlops	dulcis	blind snake
Masticophis	flagellum	pink coachwhip snake
Lampropeltis	triangulum	red kingsnake#
Natrix	rhombifera	diamond-backed water snake
Pituophis	melanoleucus	bull snake
Rhinocheilus	lecontei	Texas long-nosed snake
Sonora	episcopa	great plains ground snake
Tantilla	nigraceps	black-headed snake
Thamnophis	marcianus	checkered garter snake
Thamnophis	proximus	western ribbon snake
Thamnophis	radix	plains garter snake

Birds

The following list is only a small fraction of the birds found today in the mesquite plains area. An asterisk (*) denotes species found in Panhandle Aspect sites by Duffield (1970). For a more comprehensive listing of birds see Sutton (1967). A # mark indicates species sighted in mesquite plains area by the writer in 1978.

Genus	Species	Common Names
Bubo	virginianus	great horned owl*
Olor	buccinator	trumpeter swan*
Branta	canadensis	canada goose*
Anser	albifrons	white-footed goose*
Anas	acuta	pintail duck*
Anas	discors	blue-winged teal*
Spatula	clypeata	shoveler*
Aythya	americana	redhead*
Aythya	valisineria	canvasback*

Genus	Species	Common Names
Pedioecetes	phasianellus	sharp tailed grouse*
Corvus	brachyrhynchos	common crow*
Colinus	virginianus	bobwhite#
Cathartes	aura	turkey vulture#
Buteo	jamaicensis	redtailed hawk*

Insects and Miscellaneous

A complete listing of insects and lower orders of organisms that inhabit the project area and could have been used for food or other functions is far beyond the scope of this report. However, a few comments are in order. On the bluestem prairies, grasshoppers (Orthoptera), flies (Diptera), and bugs (Hemiptera) are the dominant insects (Costello 1969:126).

During the survey work in the summer of 1978 an abundance of grasshoppers was noted. Although prehistoric populations in the area may not have eaten grasshoppers to any extent; during periods of drought, the plants and animals are greatly affected by swarms which have been recorded in the past. In 1874 the Rocky Mountain Locust (Melanoplus spretus) caused great public concern. In the years 1933 to 1940 the High Plains Grasshopper (Dissasteira longipennis) caused considerable damage in the states of Oklahoma, Colorado, Texas, Kansas, and New Mexico. Over 2.25 million dollars were spent on control programs by the year 1940 (Wakeland 1958:1). As these figures indicate, a swarm of one insect species can have a huge effect on human populations. Even if the direct influence of various species of insects and other lower forms of life appear to be only irregular and spasmatic, the indirect influences of these species on human population in the project area could be extremely important. Unfortunately detailed data on particular species in an archeological context from sites in Southwestern Oklahoma remains to be adequately reported.

For a general picture of the kinds of associations in the mesquite plains between the flora and the land topography, Figures 3, 4, 5, and 6 are provided on the following page.

Figure 3: Flora at site 34-Gr-69(9). Figure 4: Flora at site 34-Gr-84(18).

Figure 5: Gypsum stratigraphy, North Bank Tributary.

Figure 6: View of 34-Hr-39 looking south.

Previous Archeology and Cultural History

The Paleo-Indian Period 40,000 B.P. to 7,000 B.P.: During the last decade archeological discoveries many miles away from Oklahoma on Santa Rosa Island, California, may have pushed the Paleo-Indian period back to 40,000 B.P. (Science News 1977:196). However, the only sites reviewed here will be those within a 150 mile radius of the Elm Fork Chloride Control Project. Several significant sites have been excavated and reported in this area.

In 1961 the Cooperton mammoth was discovered in Kiowa County, Oklahoma. This site has been analyzed after a considerable delay, and is now identified as a Paleo-Indian bone quarry. Samples of the bones have produced three C-14 dates that range from 17,575 ± 550 B.P. to 20,400 ± 450 B.P. (Anderson 1975:156). No stone tools were discovered from this site except several large hammerstones and an anvil stone.

The main reason for the delay in the reporting of the Cooperton mammoth was the find of the Domebo site near Stecker, Oklahoma which had several Clovis or Clovis-like points in association with an imperial mammoth. From the position of the mammoth bones and the points, it appears that the animal was killed and butchered at the spot it was found (Leonhardy 1966a:25). The similarities of this site to Paleo-Indian sites further west indicate a cultural connection (Leonhardy 1966 a :26).

> The radiocarbon dates are consistent with dates from other mammoth kill sites, strengthening the contention that the hunters of the Domebo mammoth were culturally related to the people who hunted the mammoth found at Blackwater Draw, Naco, Lehner, Dent and other sites in the southern Plains and the Southwest.

The significance of these two sites is realized, when a statement by Wedel (1961:133) is examined:

> Most date from a period probably 7,000 years ago and earlier. No sites pertaining to this period have yet been excavated in Oklahoma, though early types of weapon points are known from that state.

Many other areas in Oklahoma have produced a variety of Paleo-Indian material, including sites along Cedar Creek in Washita County (Hofman 1973) and surface finds within a few miles of the brine lake proposed in this project, south of the Elm Fork.

There are five Paleo-Indian sites within the 150 mile radius of the project in the state of Texas which deserve noting. The Miami site near Miami, Texas is a Clovis site discovered in 1933. It revealed parts of five dismembered mammoth skeletons with an association of three projectile points and a scraper (Sellards 1952).

The Lubbock site near the town of the same name in Texas has produced several Folsom points, a scraper, and burned bison bone. A C-14 date assigned to the site is 9,883 ± 350 B.P. (Wedel 1961:64). Just north of the Canadian River in the Texas Panhandle is the Lipscomb bison quarry. This is a Folsom bison kill site that has produced 18 projectile points, several side scrapers, one end scraper, two flake knives, and flake debris associated with a fossil bison, charcoal and ashes (Wedel 1961:133).

More recently the Adair-Steadman site is a Folsom association in north central Texas that has produced fluted projectile points (Tunnell 1975). One of the most productive bison kill sites is the Plainview type site, 120 miles to the southwest of the project area. One hundred bison remains along with eighteen Plainview points, end scrapers, side scrapers, and a small flake knife were discovered. The C-14 dates for the site range from 7,100 ± 160 to 9,172 ± 500 B.P. (Wedel 1961:65).

Many other reports of mammoth and extinct bison bone finds have surfaced in the area of southwestern Oklahoma and the Texas Panhandle, but they are either unsubstantiated, without provenience, or extremely questionable. Since the project area has such sites and unchecked reports in every direction; it is possible such sites could lie in the impacted area deeply buried and undetected.

The Archaic Period 7,000 B.P. to 400 A.D.: The Archaic period in southwestern Oklahoma is one of the poorest defined cultural periods in the state. Only a handful of small surveys have been completed in this region: Wyckoff (1963), Leonhardy (1966b), Burton and Burton (1971), Shaeffer (1966), Hartley (1974), David Hughes (1977), Spivey et al. (1977) and Ferring (1978). All of these studies recovered evidence of the Archaic period but only a few involved absolute dates or good stratigraphy from excavations. This review will only cover the most significant work of the region in the Archaic.

Probably the most important site in the area is the Gore Pit site since it has the oldest date in Oklahoma for an Archaic burial. Unfortunately there were no burial associations. The site is on the east edge of Lawton within the city limits. Artifacts recovered include Trinity, Ensor, Darl, Ellis, Gary, Meserve, Frio, and Abasolo projectile points, Clear Fork gouges, burins and several varieties of scrapers, choppers, bifaces, and two grinding basins. The site also contained several burned rock middens and several mussel shell middens (Hammat 1976:245-277). The one burial found in 1968 was dated with C-14 apatite fraction at 7100 ± 350 B.P.

Another early Archaic site is the Pumpkin Creek in Love County, Oklahoma. The projectile points resemble Meserve, Milnesand, Plainview, Plainview golondrina, Scottsbluff, in addition to reworked projectile points, cobbles, cores, preforms, edge blunted flakes, flake knives, hammerstones, scrapers, and lithic debris. According to Wyckoff and Taylor (1971) the assemblages were comparable to the Lime Creek site. No C-14 dates were made but based on the artifacts an estimate of 7000 B.P. was proposed for the site.

Jack Hughes and his son, David Hughes, have done a great deal of work in the Texas Panhandle and produced absolute dates for several Archaic bison kills with associated artifacts. The Little Sunday site (Hughes 1955:55-74) in eastern Randall County produced 158 stone artifacts, which included 23 projectile points (9 Ellis, 7 Refugio, 2 Palmillas, 1 Lange, and 1 Folsom). Also from this site came 72 scrapers, 5 gravers, 2 gouges, bifaces, knives, blades, a mano and milling basins. Although no C-14 dates were obtained the dominant point forms indicated a date between 2000 B.C. and 1000 A.D.

In 1977 David Hughes built on earlier work in the Texas Panhandle and reported several more bison kill sites in the area. Four sites produced artifacts and C-14 dates: the Twilla, Bell, Strong, and Collier sites. Projectile points recovered with these sites included Ellis, Marcos, Ensor, Palmillas and Trinity. From the material of these four sites an estimated range of dates was proposed at 2000 B.C. to 1000 A.D. Eight other sites were discussed as Archaic bison kills by D. Hughes and one of these was the Certain site, Bk-46 in Beckham County, a few miles north of the project area.

A younger Archaic site in the region which produced a large amount of material is the Boat Dock site, Ma-1 (Bell 1958a). A total of 125 projectile points were recovered including Gary, Bonham, Hayes barbed, Alba barbed, knives, drills, scrapers, gouges, cores, grinding stones, mullers, basin matates, hammerstone hematite, and pottery. Bell has estimated a range of 2-1000 B.C. up to 1400 A.D. for the age of the site.

One of the best stratigraphic sites in the area is the Duncan-Wilson Bluff-shelter (Lawton 1968). With a total of 25 vertical levels, the lowest eight levels produced Archaic material including Ellis, Gary, and Marcos projectile points, curved wedge knives, round-base knives, flake scrapers, thumb scrapers, 1 core scraper, a gouge, a graver, a nutting stone, a mano, and 1 small bone pick-like tool. Based on scattered C-14 dates this material was estimated to have a range of 300 A.D. to 490 A.D.

In 1973 Hofman reported an Archaic site (Cd-177) which produced a small amount of material in Caddo County. Recovered from the site were 1 graver, 2 side scrapers, 2 Clear Fork gouges, 1 "possible" Ellis and 1 "possible" Refugio projectile points. His proposed age range for the site was 2-1000 B.C. to 500 A.D.

Saunders (1974) reported on two Archaic lithic workshops, the Roberts site (Rm-52) and the Clay site (Rm-49). Saunders gives a summary of two problems of the region; the size of Archaic sites in southwestern Oklahoma and the domination of Ogallala quartzite as a lithic tool material.

Recent work by Reid Ferring in 1978 in Delaware Canyon sites (Cd-257 and Cd-258) in Caddo County, Oklahoma, has produced evidence for four occupations with the oldest possibly 6000 B.P. (personal communication, June, 1978). At least two burials were found and informally estimated in age at 2,000 to 3,000 years old. This site produced a large amount of data on paleoecology and should greatly aid interpretation of Archaic when it is published.

In recent years a fair amount of data has accumulated on a diagnostic tool form often used to mark the Archaic in the region, namely, the Clear Fork gouge. Studies on the shape, function, distribution and implications of the Clear Fork gouge include: Ray (1941), Bell (1957), Hester, Gilbow, and Albee (1973), Howard (1973), Shiner (1975), and Hofman (1977). In general the concensus seems to be that this tool is a reasonable diagnostic marker of the Archaic in Oklahoma and Texas, and may prove to be more useful in detailed analysis of sites. Several of these tools were recovered in the 1978 survey, and will be discussed later.

Finally, Leonhardy (1966b) has proposed an Archaic Summers Complex based on the test excavations of the Summers site (34-Gr-12) in Greer County. This site is only 20 miles south of the project area. It produced a rock-lined hearth and the bones of modern bison. Artifacts included Marshall, Lange, Gary, and Ensor projectile points, four manos, unifacial and bifacial tools, cores and concentrations of lithic debris. The one C-14 date was 2770 $\pm$ 150 B.P. and came from a firepit. Leonhardy (1966b) and Hughes (1976) agree that the only way to improve the picture of the Archaic in southwestern Oklahoma is simply more digging of stratified sites and reporting of absolute dates to build up a reliable chronology before dealing in greater detail with the thornier problems of the cultures represented in the area.

The Plains Woodland and Plains Village Period 400 A.D. to 1541 A.D.: A great deal of archeological research and excavations in southwestern Oklahoma and the Texas Panhandle have been completed for this period within the arbitrary 150 mile limit of this review. A detailed statement of all these sites and reports is beyond the space and funding of this report; however, a review of the most useful sites in relation to this project will be presented.

The definitions of the Plains Woodland are not well outlined in the limited region under discussion. The time markers for the beginning and the end of this period, as well as the extent of Woodland occupation and the source of the Woodland influence in the East are still not established. Nevertheless there are several sites in a 150 mile radius of the project which deserve noting.

Probably the best evidence of the Plains Woodland in the region was found at the Pruitt site (Mr-12) in Murray County, Oklahoma (Barr 1966). Artifacts found included Edgewood, Gary, Kent, Marcos, Matamoros, Shumla, Tortugas, Young, Washita, Scallorn, Morris, and Huffaker projectile points. Also found were knives, unifacial cores, choppers, hammerstones, scrapers, hoes, hematite, limonite, mullers, milling basins, an awl abrader, a beamer, and cordmarked pottery. The pottery forms seem to be related to the Fourche Maline Focus in southeast Oklahoma. Occupations were seasonal, mainly in the spring and fall. The site has evidence of three cultural periods, from Archaic, through Plains Woodland, to Washita River Focus. Materials indicated horticulture being practiced, the hunting of small animals, fishing, and gathering of seeds, nuts, and mussels. Of the two C-14 dates taken at the site, one (1140 $\pm$ 90 B.P.) fits a Woodland occupation and also adjoining occupations found in the Fourche Maline Focus and Plains Woodland in Kansas and Nebraska.

About thirty miles north of the Pruitt site, the Brewer site (Duffield 1953) has produced material resembling Woodland associations. Here in McClain County just south of the South Canadian River over twenty refuse pits were excavated and two basic pottery wares were recovered. Projectile points included five Garys and six unclassified types. Also found were cores, blades, drills, one hoe, one mano, one hammerstone, a bone fishhook, deer bone flakers, a shaft wrench, bone beamers, and a large stone pipe. One surprise at the site was a dog burial. Some small remains of human bone were recovered and a large chunk of wattle. Based on the evidence this site has been classed as a Woodland occupation.

The Duncan-Wilson Bluff-shelter (Lawton 1968) already mentioned in reference to the Archaic, has eight levels (levels 7 to 15) which relate to the Woodland and Plains Village period. From these levels projectile points included: Ellis, Gary, Scallorn, Huffaker, Marcos (level 15-13); Fresno, Washita, Reed, Bonham, Ellis, Bulverde, Gary, Catahoula, and Sequoyah (level 12 to 10): Fresno, Washita, Scallorn, Reed, Toyah, Perdiz, Huffaker, Edgewood, and Trinity (levels 9-7). Other materials recovered included: celts, hafted knives, obsidian, petrified wood, agate, selenite, antler flakers, shaft-smoothers, thumb scrapers, hammerstones, flake scrapers, mussell shell, Olivella shell, Kentucky Coffee Bean, pinon nut, water lilly and cattail. The dates estimated for these levels were based on a few scattered C-14 tests and range from 520 A.D. to 1612 A.D.

An important Woodland site in the Texas Panhandle was dug in 1952 by Jack Hughes (1962). This site produced 48 sherds (8 were Woodland cordmarked) and 53 lithic artifacts including projectile point types of Young, Fresno, Scallorn, and Ellis. Other material recovered included plain knives, beveled knives, flake scrapers, gravers, blades, a chopper-hammer, hammerstones, cores, 21 manos, and 10 grinding slabs. Hughes proposed the best age for the site as a range from 950 A.D. to 1300 A.D.

Several sites near the project area have been excavated and show extensive Plains Village associations, but have not been formally reported. One example is the Goodwin-Baker site in Roger Mills County (Rm-14). Although extensively excavated by a field school from the University of Oklahoma, it has not been reported, due to a variety of problems. Recovered materials included two house foundations with living floors, central hearths, and vertical post walls covered with baked clay (Spivey-personal communication). Large amounts of obsidian may note a strong connection to cultures further west.

In a very recent report, Saunders (1978:81) has found three Woodland sites or occupations and five occupations from the Plains Village period occupations in a survey in Cimarron County, Oklahoma, approximately 180 miles northwest of the project area.

On a larger scale several foci lie within the arbitrary radius of 150 miles from the chloride control project on Elm Fork. The closest foci to the project are the Custer Focus and Washita River Focus primarily on the Washita and Canadian rivers in south central Oklahoma. This complex of sites has been studied in many excavations and summarized by Bell and Baerreis (1951), Bell (1973), and Hofman (1975). These two foci are roughly contemporary groups who used horticulture and hunting and gathering for exploiting similar environments. Hofman (1975) has proposed a model of cultural development from Plains Woodland through Custer Focus to Washita River Focus based on artifact assemblages and carbon-14 dates (690 A.D. to 950 A.D. to 1375 A.D. respectively).

Further south running along the Red River and the Brazos River in northern Texas is the Henrietta Focus. The Harrell site near the confluence of the Brazos and the Clear Fork rivers is the type site for this association. The Henrietta Focus occurred about the same time as the Custer and Washita River foci. Krieger (1946) gives a summary of traits and artifacts and proposes a range of occupation ages at 1450 to 1600 A.D. (1946:144).

In the same work, Krieger (1946:17-84) gives a summary of the Antelope Creek Focus in the Texas Panhandle approximately 50 to 100 miles west of the survey area of this report. Krieger estimates the age of this group at 1300 to 1450 A.D.

A more recent survey and examination of the paleoecology of Panhandle Aspect sites appears in Duffield (1970). Campbell (1976) proposes a cultural continuum from Woodland through Plains Village in the recognized occupation area of the Antelope Creek Focus. This model has been analyzed and challenged by Lintz (1978) using thirty-eight known C-14 dates from these sites. Lintz found an average date of 1393 A.D. for circular units and 1365 A.D. for rectangular units, and no significant difference between the two in age at a .05 level of probability. Based on all this work it appears certain that the Antelope Creek peoples had abandoned the area just a few years before the first Spanish explorers began their famous expeditions into the Plains area.

The Protohistoric and Historic Period 1541 A.D. to 1907 A.D.: Between 1500 and 1700 there was a peak of abundance for the Plains Village peoples. These Plains Village characteristics persisted into the historic tribes of Mandans, Arikaras, Hidatsas, Pawnees, Omahas, Otos, Kansas, and Wichitas (Wedel 1961:287). One tribe known to be in the Texas Panhandle when Coronado came through in 1541 were the Querechos, or Apache nomads. Very little is known of the Apache in the Plains, archeologically (Newcomb 1961:105). The Dismal River Culture in western Nebraska seems to be late Apache, and has been dated around 1700 A.D. It was about this same time that the Comanches moved out on to the Plains from the Rocky Mountains and began attacks on the Apaches. Around 1725 to 1750 the Apaches were finally driven from the Plains by the Comanches (Wedel 1961:289).

Also around 1750 the Taovayas or Wichita confederacy tribes were receiving raiding pressure from the Osage. In 1719 over a dozen Wichita Villages were on the Arkansas Valley. By 1750 only two or three villages were left due to the pressure from Osage and Comanche. In 1759 the Spanish Fort, a fortified village defended by Wichitas, French traders, and other Indian traders was attacked by a large Spanish force with cannon under Colonel Parilla. The attack was repulsed and the Spanish retreated. There must have been a very wide spread trade through this site since Tewa Polychrome pottery from the southwest and Natchitoches Engraved pottery from the Caddoan area were both found at the site (Wedel 1961:147). Harper (1953:271) has suggested that the Wichita tribe here could have been a recent arrival from the north central Oklahoma Deer Creek area, since Osage attacks were increasing there pushing the Wichita south. Several village campsites of the Late Wichita were known in the 1800's: the Devil's Canyon site in Kiowa County, the present location of Ft. Sill where the Fort now stands and several sites along East Cache Creek, and Medicine Creek in Comanche County.

Also in Custer, Caddo, and Canadian counties, Bell and Bastian (1967) proposed a possible Wheeler Complex as a Wichita Culture association. Artifacts found there include: small unnotched points, expanding base drills, large end and side scrapers, and dark, thin, smooth surfaced, pottery with straight rims, glass trade beads and native-made gun flints.

Baugh has even found evidence of the southwest influence at the Edwards Site, Bk-11, in Beckham County just a few miles north of the Elm Fork project (Baugh 1968).

Several late protohistoric sites have been found in the area of the Elm Fork project which have not been reported. The Sand Man site is a burial with a large number of associated artifacts. Over 1000 trade beads, brass bracelets, hairpipe breast plate, metal arrow points, a willow backing plate and German Silver conchos were found. This burial probably dates from around 1850's A.D. and was found in Woodward County (Spivey-personal communication). A few unreported crevice burials from historic times have been salvaged on the Fort Sill Military Reservation in Comanche County.

There were many French, Spanish, and American expeditions through parts of the 17th and 18th centuries in the Plains, but only a few came close to the Elm Fork project area. In 1852, Captain Marcy crossed from the North Fork of the Red River and went south to the Red River thus passing close to the project area. Marcy's work provided basic information that aided the land surveys by Jones and Brown in 1857 and which helped set the boundaries of greater Greer County in 1860.

There are a few military forts which were important in the frontier history affecting the Elm Fork project area. Camp Radziminski was established in Kiowa County in 1858, Fort Cobb in Caddo County in 1859, Fort Sill in 1869 in Comanche County, and Fort Elliott, Texas, on the North Fork of the Red River in 1876. All of these military establishments were made in efforts to pacify the hostile plains tribes that were raiding and looting in the latter part of the 19th century in the area.

Fort Elliott is a typical example. The event that led to its existence was probably the attack on the Adobe Walls settlement of 28 buffalo hunters by a band of Comanches and Kiowas, in 1874 (Hart 1964:135). A portion of the Adobe Walls is now being excavated by the Panhandle-Plains Museum at Canyon, Texas. Although 30 Indians were killed and no whites, several other incidents the same year did involve deaths and led to the establishment of Ft. Elliott. The fort was active until 1890 and then was abandoned until this day.

Some relevant research has been completed on the use and effect of salt sources on prehistoric tribes. Redfield (1976:36-45) has presented a detailed summary of the accounts of tribes visiting the saline sources in Oklahoma and preparing salt for themselves.

On the basis of careful experiments Keslin (1964:12) recommends that the average adult daily requirement for salt was 0.7 grams. For an adult weighing around 150 pounds this would mean eating the equivalent of 154 pounds of corn, squash, and beans in any combination, or 2.5 pounds of meat, or 1.5 pounds of trimmed muscle (Keslin 1964:12).

Several other early accounts tell of the use of salt. The De Soto expedition in 1541 suffered from a lack of salt supplies and persuaded Indians to lead them to some natural salt deposits in northeastern Arkansas (Keslin 1964:19). The Chronicler Inca, Garcilaso de la Vega tells of sixty Spaniards dying from the lack of salt after a year of traveling in an unknown territory (Keslin 1964:15). Redfield (1976: 36-45) lists many tribes: Pawnee, Osage, Kickapoo, Cherokee, Shawnee, Comanche, and Apache that were known to visit the salt deposits in the Great Salt Plains area of Oklahoma, 140 miles northeast of the Elm Fork salt sources.

An unusual historic site has recently been excavated in Floyd County, Texas which was occupied around the 1860's to 1880's (Guffee 1976). It is unusual in several respects. First, because of the three economic groups represented there: Comancheros, Ciboleros. and

Pastores. These three groups were New Mexicans who moved into the area for trade with the Comanche, hunting of the buffalo, and sheep herding pursuits. The Ciboleros were most striking since they hunted buffalo in this period, with long heavy lances. The dugouts found on these sites were long rectangular structures and quite different from American dugouts.

Also of historic interest is the fact that greater Greer County, which included all of present Oklahoma that lies southwest of the North Fork of the Red River, was in the late 1800's a haven for outlaws. There is little doubt that part of the Dalton gang was there in the 1890's. Greer County was also a suspected hideout of the outlaws Bill and Bob Christian in 1895. The Christian brothers were also known as Black Jack Williams and Tom Anderson and later led a gang called the "High Fives" (Shirley 1978:300). The many exploits of outlaws in this area received great notoriety and became a great nuisance to the honest settlers in the state. However, by August 18, 1898, the El Reno News ran the following article: "Oklahoma has lived down its reputation of the land of outlaws, by killing them off, and the disreputable news correspondents have scurried for cover" (Shirley 1978:416).

The Elm Fork area was involved in many political changes of sovereignity. A chronological listing is provided for a reference:

1763- Territory of Louisiana went from France to Spain (included Greer County)

1800- Same territory went back to France

1803- Louisiana Purchase bought by President T. Jefferson

1821- Mexico won independence from Spain

1835- Texas seceded from Mexico

1852- Captain Marcy explored the upper Red River near project area

1860- Greer County created by a special act of Texas legislature

1881- Texas State Legislature authorized land certificates to veterans of the Texas Revolutionary War. Settlers entered Greer County (many dugouts)

1884- President Arthur issued a proclamation against all trespassing in Greer County

1884- Mangum townsite surveyed

1885- Troops sent from Ft. Sill to expel intruders. Lt. C. J. Crane reported not more than 10 families and 60,000 cattle with 100 drovers in county.

1885- 1st frame house built in Greer County (Ethridge 1937:39)

1886- 1st county officers elected in Greer County

1887- President Cleveland warned again against trespassing

1890- Passage of the Organic Act, created Territory of Oklahoma

1896- Supreme Court of U.S. in U.S. vs. Texas held that Greer County was part of Oklahoma

1907- Oklahoma becomes a state

With the conclusion of these events, the modern historical period began.

Basic Methodology

Techniques and Procedures: Since 100% of the impacted area of the project required surveying, no survey sampling techniques were used. A two man team of archeologists specially trained in lithic technology covered the entire area on foot. Most of this was accomplished by walking a predetermined route approximately 30 feet apart. All sites were tagged and numbered with a red flag when located. All of the significant sites were photographed and had a site survey form completed in the field. All material on the surface recognized as evidence of human occupation was placed in labeled bags, and carried back to our vehicle. At the end of the week all material was returned to the laboratory at Lawton. Most of the measurements were done in metric units, except for the estimated surface area of the sites which was done in acres, and long distances from landmarks done in miles.

Five sites of the total thirty-six were chosen for minimal testing: (34-) Gr-67, Gr-68, Gr-69, Gr-70, and Hr-39. The tested sites and test pits were mapped and excavated in metric units. Test pits were one meter square and used 10 centimeter arbitrary levels. All of the dirt was screened through ¼ inch hardware cloth and all tools, flakes, carbon, bone, shell, and suspicious organic matter were saved and placed in labeled paper or plastic bags. Standard archeological excavation forms were filled out for each level, and photographs were taken of each test pit. The five tested sites were mapped with an alidade, stadia rod, and plane table, except for Gr-68 and Gr-69 which were mapped with a brunton compass in a heavy drizzle.

In the lab at the Museum of the Great Plains, standard procedures for washing, labeling, cataloguing, and storage were used. Tools that appeared to show small retouch or wear on an edge were examined under a hand held glass or the low power of a binocular Graf Apsco microscope for final determination. Flake scars and striations watched for were those patterns described by Semenov (1964).

Philosophy and Background: Due to the increasing use in modern archeology of jargon, peroration, and misuse of statistics, special efforts were made in this report to include statements of clear and concise nature. When new terms or concepts are used they were necessary for a more complete understanding of the topic discussed. In general this report attempts to follow Wedel (1978:35) in philosophy of scientific writing:

> Add to this the penchant of many writers to use poly-syllabic terminology in place of simple straight-

> forward writing, and one gets the impression that all too often small ideas are masked by professional or pseudo-professional jargon. At its best, someone has said, science is simple--the simplest arrangement of facts and words that sets forth the truth best deserves the term scientific. A technical report designed primarily to serve the scientist and his professional colleagues ought always to conclude with a concise summary in plain English so that the general non-specialist reader can understand what is going on. The purpose in writing is, after all, to communicate, and this should include the interested but untrained reader who is helping to support us, no less than it should our professional colleagues.

Because of the nature of the project and earlier surveys in the general area (Leonhardy 1966b and Wyckoff 1963), it was anticipated that the major bulk of cultural material recovered would be lithic. Although two small historic sites were found, this supposition held true. As a result, the major effort in the report is directed to the lithic tools and debris. The basis for the lithic description and limited analysis is from many sources: Crabtree (1966, 1967, 1972, 1975); Bordes (1973); Faulkner (1972); Jamieson (1976); Muto (1976); Oakley (1964); Semenov (1964); Stothert (1974); Wilmsen (1974); and Wyckoff (1976).

Using a processual model of lithic technology as agreed upon or implied by most of these authors, and the detailed processual stages diagrammed in Bobalik (1977:33-38); this report describes the tool and flake debris with the following modification. The conceptual type categories differ slightly from Bobalik and are refined in some aspects (See Fig. 7). This is not to say other typologies are wrong, but the conceptual definitions are diagrammed to be more clear in what exactly is meant. For example, when a cobble core is described, the item will automatically be understood (due to the term cobble) to have over 50% of its surface area in cortex and be between 64mm and 256mm across in size. In other words, for this report the terms cobble and pebble before a tool type automatically mean the tool has over 50% cortex on its surface and falls within a specific size range.

A second exception to many typologies is in the use of the terms chopper and chopping tool. This report follows Bordes (1973:242) definition. Here a chopper is only worked on one side and is unifacial, and a chopping tool is worked on two sides and is bifacial (See Fig. 7).

For purposes of clarification an arbitrary line of 12mm thickness was drawn to divide the thick bifaces from the thin bifaces. Also added to this conceptual category typology is the group of polyface material which is an attempt to define clearly pieces with triangular cross-section or blocky configuration or a smooth, rounded configuration (See Fig. 7). It is easily recognized that all archeologists would not agree with this particular conceptual typology diagram, but it is presented to clarify the descriptions and terms used in this report.

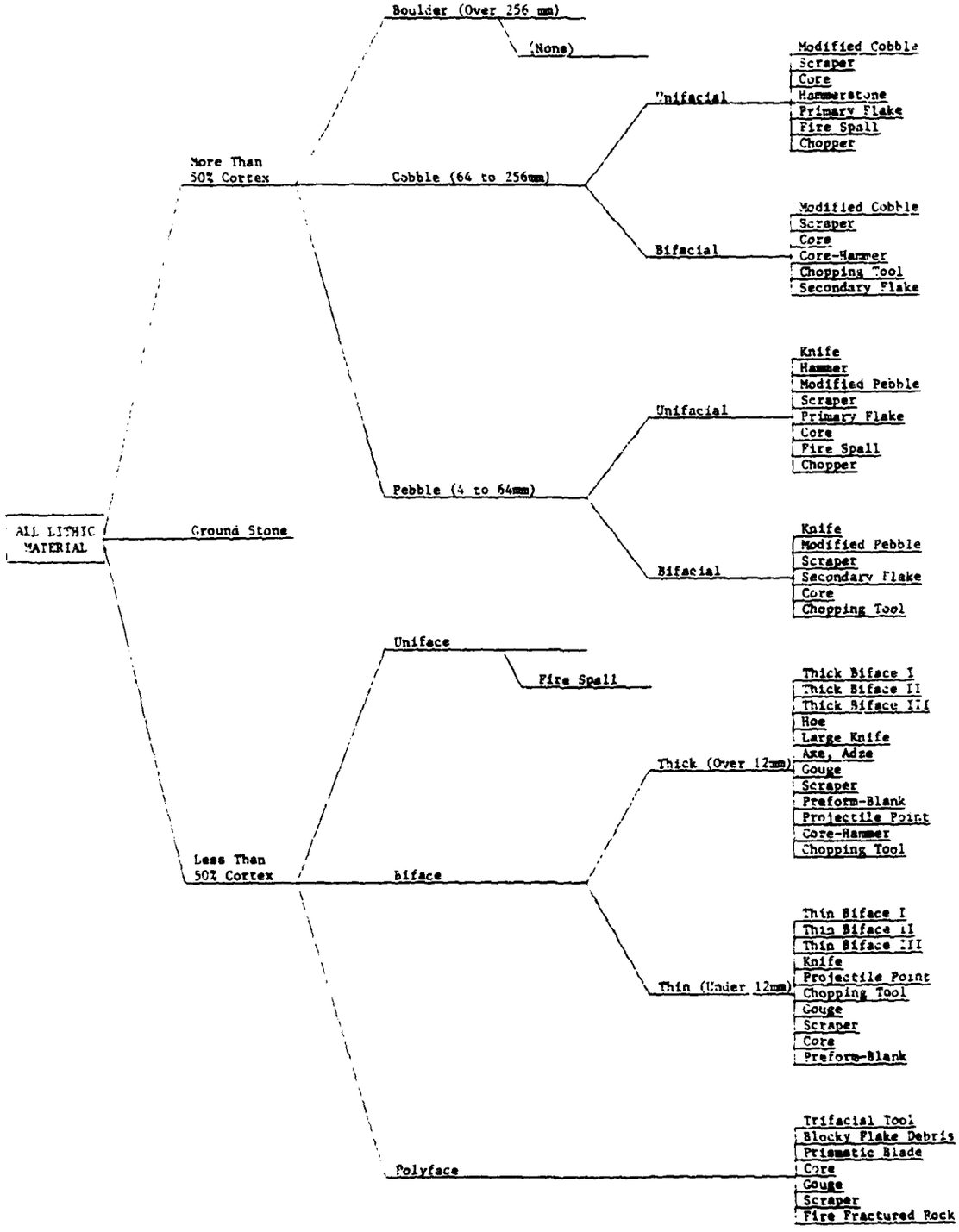


Figure 7: Conceptual categories of typology used in this report.

As a final consolidation of Bobalik's processual model, this report condenses the types of bifaces. The basic definitions are:

Biface I - rough tool with some cortex worked on both sides
Biface II - rough outline, of blank quality, no cortex
Biface III - finished tool, fine edge flaking and outlined shape

The descriptions and terminology of the historical materials recovered largely follows the format used in South (1974) and Spivey et al. (1977). For both historical and prehistoric artifacts not all are shown in photographs, but only those considered necessary for a representative sample, and those considered most significant for historical, archeological, or cultural reasons.

For the purposes of this survey a site is defined as a locus of cultural materials with five or more flakes per square meter; or one tool plus one or more flakes per square meter. A single, isolated flake or tool with no other artifacts nearby would not quality the locus as a site.

The criteria used for determining site significance in this survey corresponds to the criteria or factors proposed by Bell and Gettys (n.d.).

1. Size-Area of occupation
2. Depth
3. Number of components
4. Range of activities
5. Ecological setting
6. Degree of disturbance of deposits
7. Degree of preservation
8. Previous knowledge
9. Uniqueness
10. Period of occupation
11. Regional, state, national interest

The potential of each site examined in this survey to produce data in each of these criteria categories was carefully considered. Due to the simple lack of abundant cultural material found on the sites, and the financial limitations of the survey, most of the sites did not show potential for any significant data in these criteria categories.

Other criteria used for determining site significance included unusual fossils or geological deposits and formations which would add to knowledge in paleontology, geology, or other natural sciences. The application of all these criteria of significance for each site was not a simple question, but involved comparison of data actually produced from sites in the survey and the quality of data already available from known sites in the region.

Using the above criteria to advance present knowledge, loci were considered eligible for the National Register of Historic Places if they contained objects, structures, buildings, sites, or districts significant in American history, architecture, archeology, or culture and possessed integrity of location, design, setting, material, workmanship, feeling and association. If such items (1) associated with events of an important contribution to our history, (2) associated with the lives of persons important in our past, (3) embody the distinctive characteristics of a

type, period, method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction or (4) have yielded or may be likely to yield information important in prehistory or history; then they were considered eligible for the National Register. The final recommendations on sites surveyed are in the last chapter.

Site Descriptions

Introductory Comments: The site descriptions include all the sites found within the project area during the field work in August 1978. It also includes four sites previously surveyed by Jack Hughes in 1973. These four sites were relocated and resurveyed in 1978 due to their close proximity to project construction areas. Other sites surveyed in the 1973 work by Hughes were not revisited due to their distance away from the proposed dam and pipeline, and were therefore unaffected by the project. The Elm Fork channel is shown in Fig. 8.

The positions of all the sites listed were located on the USGA 15' map for Erick, Oklahoma quadrangle. Every site considered significant was photographed and marked with a red plastic tag. All material was collected from the surface unless noted differently under field procedures. The tool categories used are summarized in Figure 7. The odd sequence of site numbers is the result of permanent numbers assigned to sites in a different order than the sites were found. Temporary site numbers are included as extra reference points and follow the listed permanent site number, as: 34-Gr-71 (1). The four sites which were already found will therefore not have temporary site numbers (Table 5). The five sites which were tested are taken out of their original order and placed at the end of these site descriptions. Abbreviations used for the material types are: Og.-Ogallala quartzite, P.W.-petrified wood, Qtzt.-quartzite, Tec.-Tecovas, Ed.-Edwards Plateau flint, Alib.-Alibates, Misc.-sandstone, limestone, volcanic, and unknown sources. Under the discussion sections, most of the site functions are largely estimates from a slim data base, and should not be considered conclusive or unalterable.

34-Gr-40

Site Description: In 1973 Jack Hughes described this site as a small, low concentration of flake debitage and burned rocks, laying on a Permian bench and eroded by edgewash and a road-cut. In 1978 very little more was found. The site appeared to be one acre of very thin lithic material on and around the crest of a terrace above the Elm Fork flood plain which slopes down south toward the river. The site is on rough broken land about a quarter of a mile north of the Elm Fork. The nearest water is Fish Creek which runs all year one eighth of a mile west of the site. The site is one and a half miles northwest of the proposed dam, and about 100 meters north of the proposed pipeline.

Figure 8: Elm Fork Channel, looking West from 34-Gr-94(29).

Field Procedures: All material indicating the presence of human activity was collected, placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Thick Biface II	1							9C
1 Chopping Tool	1							9B
1 End Scraper		1						9D
2 Modified Flakes	1			1				
5 Total								
Flake Debris	20	1	2	1		2	2	

Historic Material

One piece of whiteware 9A

No Floral or Faunal Material

Discussion: Due to the small amount of material recovered, little can be inferred about this site except that it was probably a small temporary camp. One possible fire hearth was discovered on the top of the terrace. No firm age period can be established for this material.

Recommendations: In 1973 Hughes reported this site was of slight importance and in no danger from project impacts. The same evaluation is proposed here. No further archeological mitigation is recommended for this site.

34-Gr-41

Site Description: Jack Hughes surveyed this site in 1973 and found a few lithic tools: one Alibates blank, two scrapers (Alibates and chert), and one hammerstone out of Ogallala. Evidently he ignored the historic debris in the area which was collected in 1978. Hughes described the site as a small, low concentration site with little flake debris and a few burned rocks sitting on a quaternary terrace immediately east of Fish Creek and north of the county road. Upon returning to the area, the survey in 1978 found a small amount of lithic material and a much larger amount of historical debris on the surface covering an area of approximately two acres. Fish Creek provides a permanent water supply only 50 meters to the west. The site is on rough broken land one and a half miles northwest of the proposed dam and 100 meters north of the pipeline.

Field Procedures: All material indicating the presence of man was collected, with one exception of a small section of clay brick and mortar circular structure which resembled the remains of a well.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
2 Cobble Chopping Tools	2							10C,D
1 Disc Scraper							1	10B
1 Core Fragment			1					10A
1 Modified Flake	1							
5 Total								
Flake Debris	3	4		1	1	2	1	

Historic Material

Kitchen Artifact Group	
Ceramics	
11 pieces of stoneware	11A,B,C
15 pieces of clear glass	12i
1 piece of olive glass	
16 pieces of amethyst glass	12A-H
75 pieces of whiteware	13A-H
1 piece of brown glass	
1 piece of milkglass	
2 pieces of iron woodstove	14A,E
Activities Group	
1 iron saddle cinch buckle	14D
1 iron bar	14B
1 iron gear part	14C
138 Total	

No Floral or Faunal Material

Discussion: This site probably has a small prehistoric component together with the historic component. The prehistoric material is too incomplete to indicate an age period, but does hint at a small temporary campsite. The historic material indicates a domestic occupation of some duration. There is the possibility of a nearby homestead either on the site or a short distance away and using the site as a dump. There was no evidence of a structure in the site area. A probable range for historic material is 1880 to 1910. Site is about 100 meters north of the proposed pipeline route, and a portion of the surface is already disturbed.

Recommendations: No further archeological work is recommended.

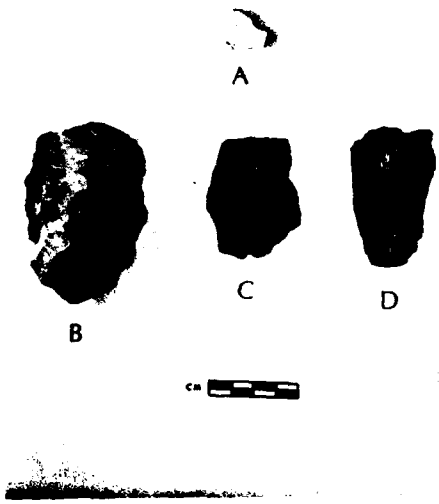


Figure 9: Artifacts from site 34-Gr-40.

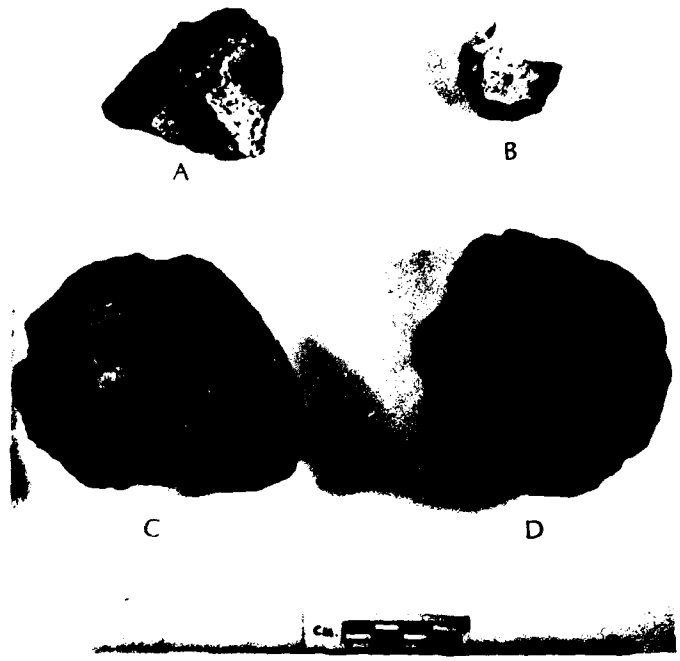


Figure 10: Artifacts from site 34-Gr-41.

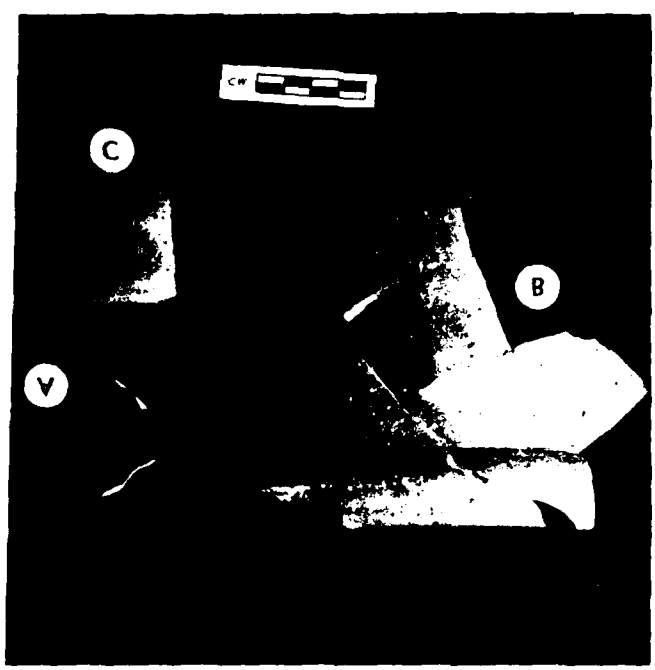


Figure 11: Artifacts from site 34-Gr-41.

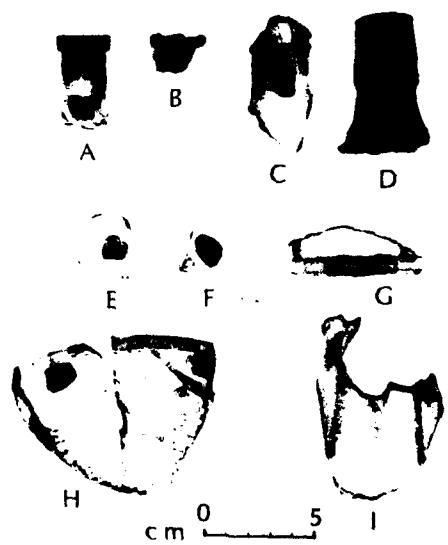


Figure 12: Artifacts from site 34-Gr-41.

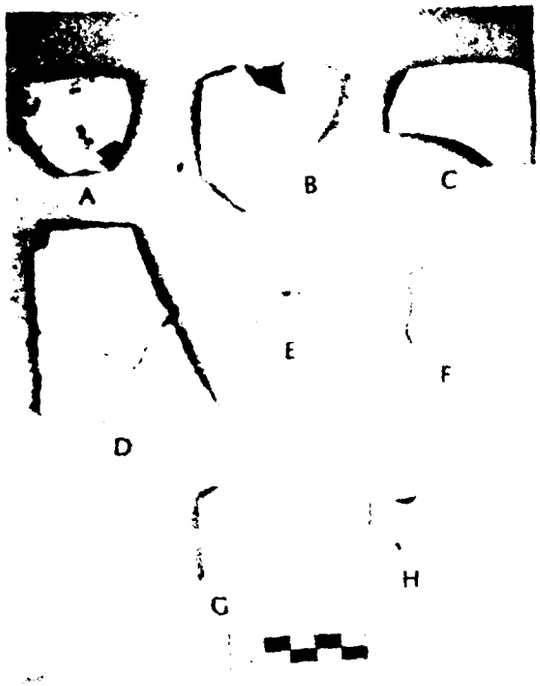


Figure 13: Artifacts from site 34-Gr-41.

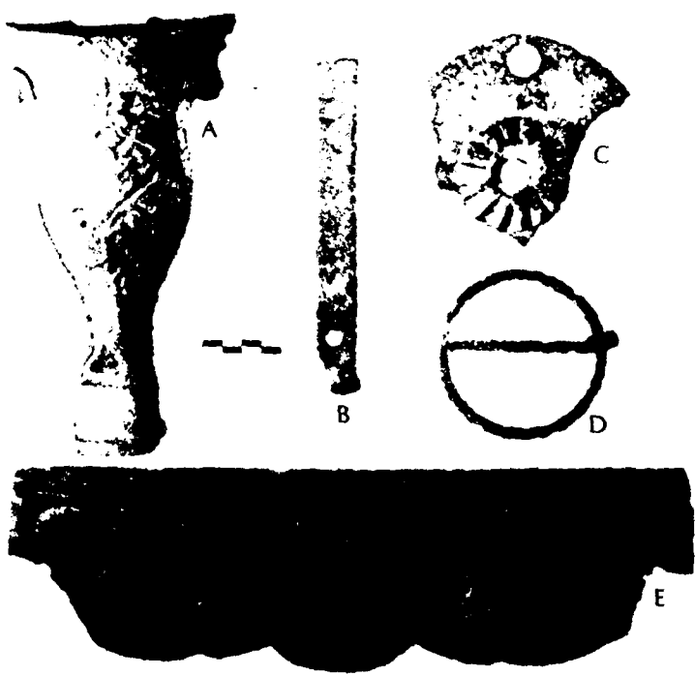


Figure 14: Artifacts from site 34-Gr-41.

Figure 15: Artifacts from site 34-Gr-71(1).

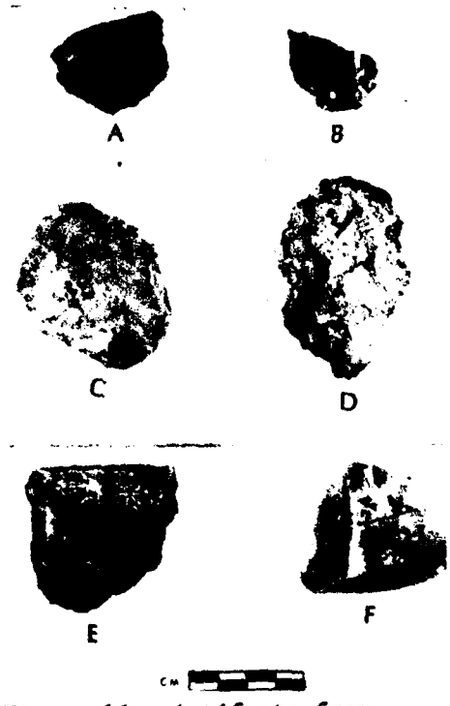


Figure 16: Artifacts from site 34-Gr-72(2).

34-Gr-71 (1)

Site Description: This site is a light scatter of lithic material covering approximately two acres of a terrace facing south. It lies a quarter of a mile east of the Elm Fork and 100 meters north of the present county road. The surrounding several acres are eroded Pleistocene gravel deposits. The site is above the Elm Fork's flood plain and lies a quarter of a mile south of the high ridge that bounds the Elm Fork Valley. The site covers around two acres and its terrace is badly eroded. Over fifty percent of the surface is bare of vegetation. The site will lie south of the proposed dam and east at least 300 meters from the pipeline.

Field Procedures: All material indicating human activity was collected, placed in labeled bags, and carried back to the lab for analysis. This was possible due to the small amount of surface cultural deposit.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Thick Biface I		1						15G
1 Cobble Chopper			1					15H
1 Cobble Chopping Tool	1							15A
1 Elliptical Core			1					15E
1 Multidirectional Core	1							
1 Cobble Core	1							15B
1 Chopper-Scraper			1					15F
1 Unifacial Core-Scraper		1						15D
2 Modified Cobbles	2							15C
10 Modified Flakes	8	1	1					
20 Total								
Flake Debris	25	4	13	1		1	2	

No Historic Material

No Floral or Faunal Material

Discussion: From the numbers and kinds of tools represented, the site appears to be a temporary lithic workshop, with no evidence of fire hearths or a longer occupation. The close proximity to modern roads may indicate that projectile points were picked up by local collectors, and thus explain why none were found on the site. No firm age period is indicated from this assemblage of tools.

Recommendations: Due to the eroded condition of the site, and the small number of artifacts on the surface, a very low value is placed on the site. No further archeological mitigation is recommended.

34-Gr-72 (2)

Site Description: This is a very thin scatter of flint flakes over about 2 acres on the east edge of a large gully that drains to the south. A second area (B) is about 200 feet N.E. of the first area and has two piles of cobbles intermixed with flakes. The site is on rough broken land about 100 meters southwest of the base of the main bluff. Elm Fork is approximately a half mile southwest of the site and was probably the nearest potable water in prehistoric times. The site is about a quarter of a mile west of the proposed dam and fifty meters south of the pipeline route.

Field Procedures: All lithic material indicating the presence of man except for several large cobbles, was collected, placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
2 Core Fragments			1*	1				16F*
1 Thin Biface I		1						16B
4 Thick Biface I	3	1						16A,C,D
2 Thick Biface II			2					16E
2 Modified Flakes	1	1						
11 Total (*asterisk denotes which tool is in photograph)								
Flake Debris	29	8	5			1	4	

No Historic Material

No Floral or Faunal Material

Discussion: From the artifacts recovered the site appears to be an initial lithic processing station with no evidence of camping activity. No cultural period is inferred due to a lack of any diagnostic artifacts.

Recommendations: Because of the small size of the site, and the badly eroded surface, no further work is recommended for this site.

34-Gr-73 (3)

Site Description: This area barely qualified as a site. It sits on the flat top of the main bluff near the east edge of the down slope. The site is apparently only a few meters across. Only one quartzite hammerstone (Fig.17 a), and one modified flake of petrified wood were found.

No Historic Material

No Floral or Faunal Material

Discussion: Due to the small amount of material recovered little more than an indication of a temporary lithic workshop is indicated. No cultural period is indicated.

Recommendations: No further archeological work is recommended.

34-Gr-77 (5)

Site Description: This site sits on the south edge of a large ravine draining to the east. The site is about 100 meters east of the base of the main bluff. The nearest water is southeast or downstream one half mile. The site area is classified as badlands and will be a third of a mile north of the dam site. The site is probably not more than three meters in diameter and may be deflated.

Material Recovered: Lithic Material
Only two artifacts were recovered including one small Clear Fork gouge made from Ogallala, and one projectile point midsection of Alibates.

Field Procedures: All materials indicating the presence of man were collected. After the two finished tools were found, a period of thirty minutes searching the area did not produce one more flake.

Discussion: The two finished artifacts including one made from a type of material over 100 miles away indicates an occupied camp for at least a short period of time. The Clear Fork gouge probably indicates an Archaic period or an early Paleo-Indian occupation, however little else can be safely assumed.

Recommendations: Due to the extreme erosion of the general area, no further archeological work is recommended.

34-Gr-74 (6)

Site Description: This site covered a half acre on the west bank of the creek which will form the west arm of the proposed lake (see Fig. 8). The area included a few lithic tools and flake debris within fifteen meters of this creek bed and shows a lot of erosion. The site is a half mile north of the proposed dam site and rests on Treadway soils association of Permian clays with high calcium carbonates. The nearest water source is three-fourths of a mile downstream.

Field Procedures: All material showing indications of human activity was collected, placed in labeled bags, and carried back to the lab.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Mano Fragment							1	18C
1 Drill Tip						1		18B
1 Side Scraper					1			18A
3 Modified Flakes	1					1	1	17B,C,D
6 Total								
Flake Debris	3	2	1					

No Historic Material

No Floral or Faunal Material

Discussion: Although no diagnostic artifacts were recovered, the presence of a mano together with tools made from materials over 100 miles away hint at an occupation by peoples with either long range traveling traditions or an advanced trade network. The amount of material does not provide enough clues to establish a particular cultural age period. A minimum occupation of several days is probable.

Recommendations: Because of the amount of material and the degree of erosion, no further archeological work is recommended for this site.

34-Gr-75 (7)

Site Description: This is a small lithic scatter about a half acre in size which is extremely eroded in every direction. The creek which forms the west arm of the proposed lake is a few meters to the west. The site rests on the Treadway soils association of red Permain deposits. The proposed dam is due south a half mile. The nearest water supply was likely springs in the main bluff a quarter mile to the northwest or pools in the creek bed downstream one mile.

Field Procedures: All material indicating the presence of man was collected, placed in labeled bags, and carried back to the lab for analysis. Due to the small amount of material, no photos were taken.

Material Recovered: Lithic Material
All the recovered material was Ogallala quartzite and consisted of one modified flake and four pieces of flake debris.

No Historic Material

No Floral or Faunal Material

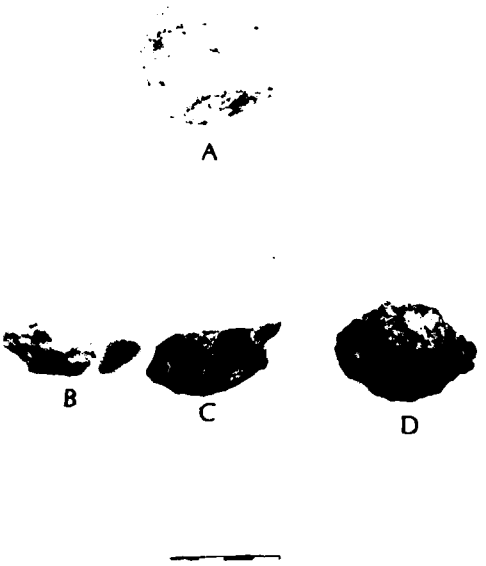


Figure 17: Artifacts from site 34-Gr-73(3) & 34-Gr-74(6).

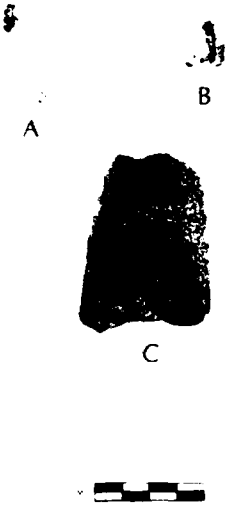


Figure 18: Artifacts from site 34-Gr-74(6).

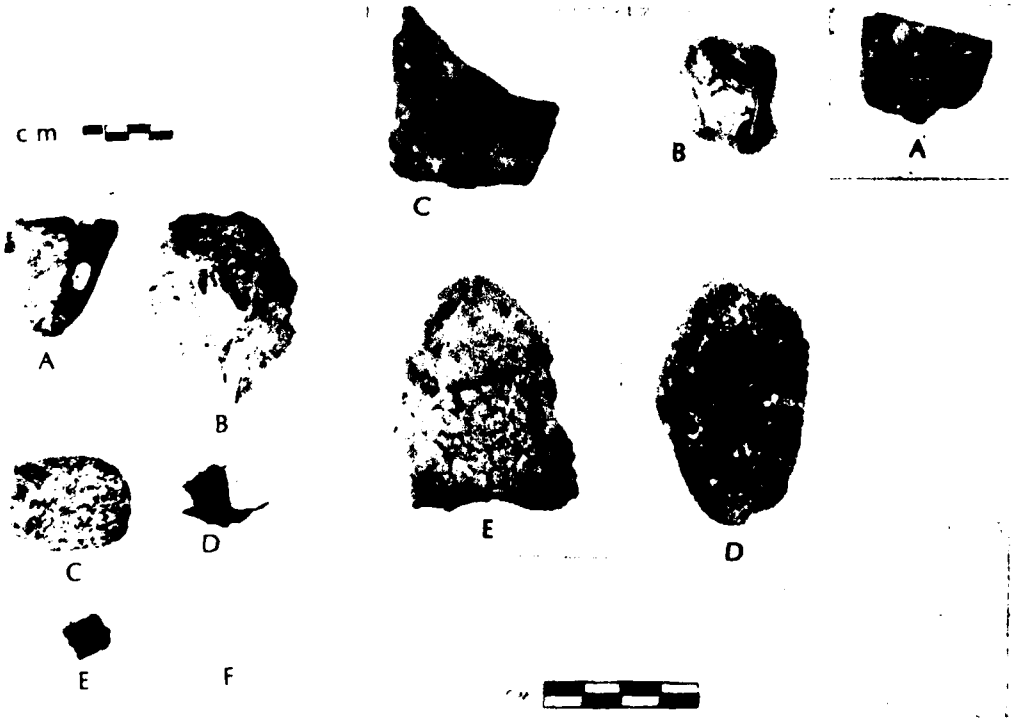


Figure 19: Artifacts from site 34-Gr-76(10).

Figure 20: Artifacts from site 34-Gr-78(12).

Discussion: The material recovered is barely enough to designate a site, but the amount of erosion could have carried away a great deal of material. The material found could indicate a small temporary lithic workshop.

Recommendations: Because of the extreme erosion and small amount of material recovered, no further archeological work is proposed.

34-Gr-76 (10)

Site Description: This site contained about one acre of lithic material scattered near the base of the main bluff fifty meters to the northeast of the site. The site rests on a five degree slope with a large ravine immediately to the south, and a creek bed 70 meters to the southwest. The amount of erosion is not too severe, although the soil is classified as rough broken land with little or no top soil. The site is two miles north of the proposed dam, and the nearest water was probably some spring in the main bluff a quarter of a mile west.

Field Procedures: All material which indicated human activity was collected, placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Trifacial Tool	1							19A
1 Chopping Tool	1							19B
5 Modified Flakes	1	1	1		1	1		19C,D,E,F
7 Total								
Flake Debris	3							

No Historic Material

No Floral or Faunal Material

Discussion: The artifacts present indicate an activity camp and not a lithic processing camp. No diagnostic tools were present to point to a cultural age period. Due to the effects of erosion on any provenience at the site, the value for further work is low.

Recommendations: No further archeological work is recommended.

34-Gr-78 (12)

Site Description: This site is a half acre light lithic scatter along the top of a long, low ridge running northwest to southeast and

about 500 meters west of the North Bank Tributary. The soil is classed as rough broken land and is badly eroded. The proposed dam is a half mile to the south and the nearest water is North Bank Tributary a half mile to the east.

Field Procedures: All material which indicated the presence of man was collected, placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Hammerstone			1					20D
1 Clear Fork Gouge	1							20E
2 Thick Bifaces I	1	1						20A,B
3 Modified Flakes	2					1		20C
7 Total								
Flake Debris	17	4				3		

No Historic Material

No Floral or Faunal Material

Discussion: The artifacts and location of the site on a good observation point of the valley tend to give support to the idea that the site was a temporary camp and tool processing station. The Clear Fork gouge would hint at an occupation before 400 A.D. although this is certainly not a strong indication, given the surface provenience.

Recommendations: The site area is nearly bare of vegetation and badly eroded. No further archeological work is recommended.

34-Gr-79 (13)

Site Description: This is a very thin lithic scatter over one acre of ground on a low east facing terrace above North Bank Tributary. The terrain is classed as badlands with very little or no top soil and erosion is severe. The nearest water would be North Bank Tributary a quarter mile to the east. The site is about a quarter mile north of the proposed dam.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Projectile Point		1						21B
1 Projectile Point Fragment	1							21D
2 Cores	2							21L

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
2 Chopping Tools	2							21J,K
1 Modified Pebble							1	21i
3 Scrapers	3							21A,F,G
3 Thick Biface I	3							21H
2 Thin Biface I	2							21E
2 Thin Biface II	2							21C
4 Modified Flakes	4							
21 Total								
Flake Debris	21	4	5			2		

No Historic Material

No Floral or Faunal Material

Discussion: This site appears to be a temporary camp site with several different activities being performed. Work on stone tools as well as food processing and hide preparation seems likely here. The single whole projectile point resembles a Morhiss type (Bell 1958b:58) which has a range of 2000 B.C. to 1000 A.D. This is the age suggested for the site.

Recommendations: Due to the severe erosion and probable loss of provenience no further archeological work is recommended.

34-Gr-80 (14)

Site Description: This is a half acre lithic scatter on the very top of a long ridge eroded badly on all sides running northwest to southeast. A fifty foot vertical ravine lies on the north side and a slightly smaller one is on the south. The south edge of the site has been disturbed by a jeep trail running to the east. The soil association is classed as rough broken land; the site is about a mile north of the proposed dam. The nearest water is a half mile downstream on the North Bank Tributary.

Field Procedures: All material indicating the presence of man was collected, placed in labeled bags, and carried back to the lab.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Biface II	1							22C
1 Biface III	1							22B
1 Graver		1						22A
3 Total								
Flake Debris	11	1	2			2	1	

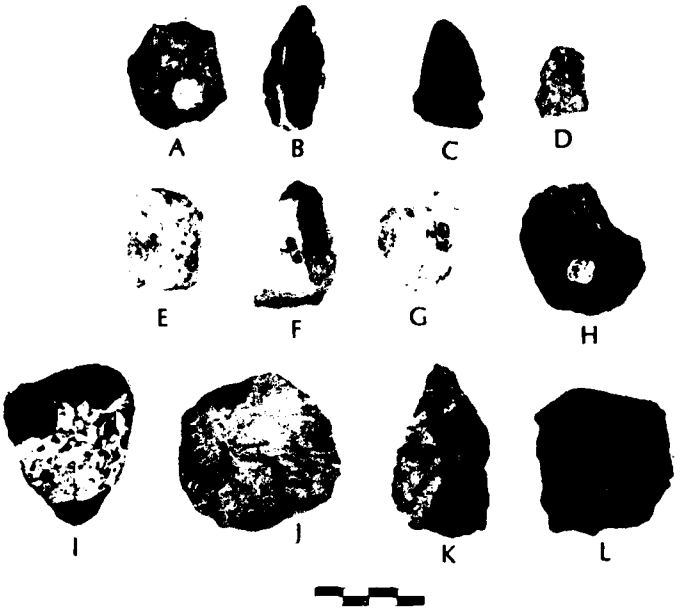


Figure 21: Artifacts from site 34-Gr-79(13).

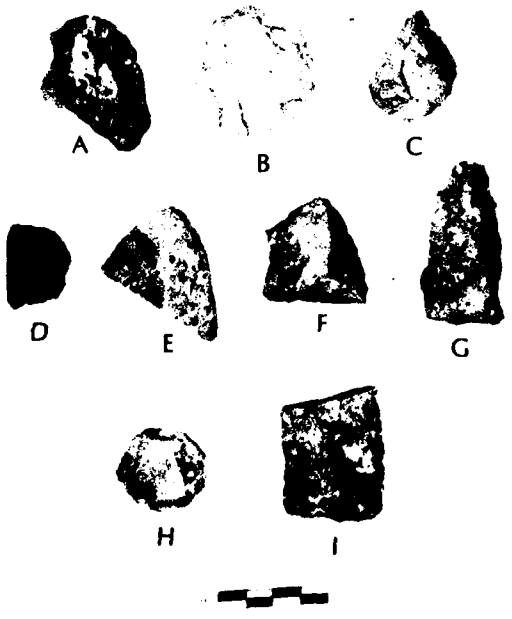


Figure 22: Artifacts from site 34-Gr-80(14), 34-Gr-82(16), & 34-Gr-83 (17).

No Historic Material

No Floral or Faunal Material

Discussion: No cultural relationships can be safely inferred from the amount of material recovered. However, the artifacts and the high observation point at the site seem to indicate a small work station for a short time period.

Recommendations: Due to the small amount of material, and the apparent shallowness of the site, no further archeological work is recommended.

34-Gr-81 (15)

Site Description: This site covered about one acre in light concentration of lithic material. It sits across the flat top of a low terrace 300 meters west of the North Bank Tributary and a half mile north of the proposed dam. The slope is moderate, but the north side of the site has been destroyed by well drilling activities. The site area is classed as badlands and there are very large ravines 200 meters to the north and south. The nearest water would be about a half a mile downstream on the creek east.

Field Procedures: All material indicating the presence of man was collected, placed in labeled bags, and carried back to the lab.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
2 Clear Fork Gouges	2							23H,J
4 Scrapers	2			1		1		23D,F,G,I
3 Modified Flakes	3							23A
1 Cobble Chopping Tool	1							23K
2 Thin Biface II						2		23B,C
1 Pebble Chopping Tool							1	23E
13 Total								
Flake Debris	11	3	1	2		3		

No Historic Material

No Floral or Faunal Material

Discussion: Implications from the collection of artifacts from the site imply sedentary activities. The lack of projectile points and presence of scrapers, gouges, and chopping tools hint at the food and skin processing functions. The lack of diagnostic tools makes definite age period difficult, but the probable range is from 6000 B.C. to 400 A.D.

Recommendations: Because of the deflated and eroded conditions of the site, no further archeological work is recommended.

34-Gr-82 (16)

Site Description: This area covers one acre of ground with a thin lithic scatter over a low terrace 100 meters west of North Bank Tributary. The soil is classed as badlands with little or no top soil, and severe erosion. The site is a half mile north of the proposed dam, and the nearest water is in pools on the North Bank Tributary 200 meters downstream.

Field Procedures: All material which indicated any human activity was collected, placed in labeled bags, and carried back to the lab.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Disc Scraper					1			22H
1 Gouge Fragment	1							22I
2 Total								
Flake Debris	4	1	2	1				

No Historic Material

No Floral or Faunal Material

Discussion: The small amount of material barely qualifies this area as a site. The two tools may indicate a processing camp, but this is not certain. The value of the site is very low because of erosion and the small size.

Recommendations: No further work is recommended at this site.

34-Gr-83 (17)

Site Description: This site covers about one acre of the top of a long ridge running southwest to northeast and 200 meters west and 50 meters higher than the creek bed in elevation. The soil association is classed as rough broken land with little top soil, and shows considerable effects of erosion. The material is a light lithic scatter over the top of the ridge. The proposed dam is one mile southwest. The nearest permanent water source was probably the pools in North Bank Tributary a half mile downstream.

Field Procedures: All material was collected which indicated human activity, placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
2 Thin Biface II	1	1						22D,E
1 Irregular Scraper	1							22F
1 Possible Gouge	1							22G
4 Total								
Flake Debris	3	3						

No Historic Material

No Floral or Faunal Material

Discussion: This is a very small amount of material with no diagnostic material present. The ratio of finished tools to flakes may mean the area was used for specialized activities and not a lithic work area. However, because of the size of the amount of material and degree of erosion the value of the site is very low.

Recommendations: No further archeological work is recommended.

34-Gr-84 (18)

Site Description: This site covers an area approximately 70 meters in diameter and sits at the base of the main bluff to the northwest. A deep ravine bounds the site on the south side. There is considerable erosion on the surface. The site is about a mile and a half north of the proposed dam, and the nearest water was probably a pool in North Bank Tributary a quarter of a mile east. The terrain is classed as rough broken land, and consists of a lithic scatter up to the base of the bluff.

Field Procedures: All material which indicated the presence of man was collected, placed in labeled bags, and carried to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Hammerstone	1							24C
1 Cobble Chopping Tool	1							24A
2 Scrapers	1	1						24D
1 Core	1							24B
1 Thin Biface I		1						24F
1 Thick Biface II		1						24E
4 Modified Flakes		4						
11 Total								
Flake Debris	29	6	3	3		2		

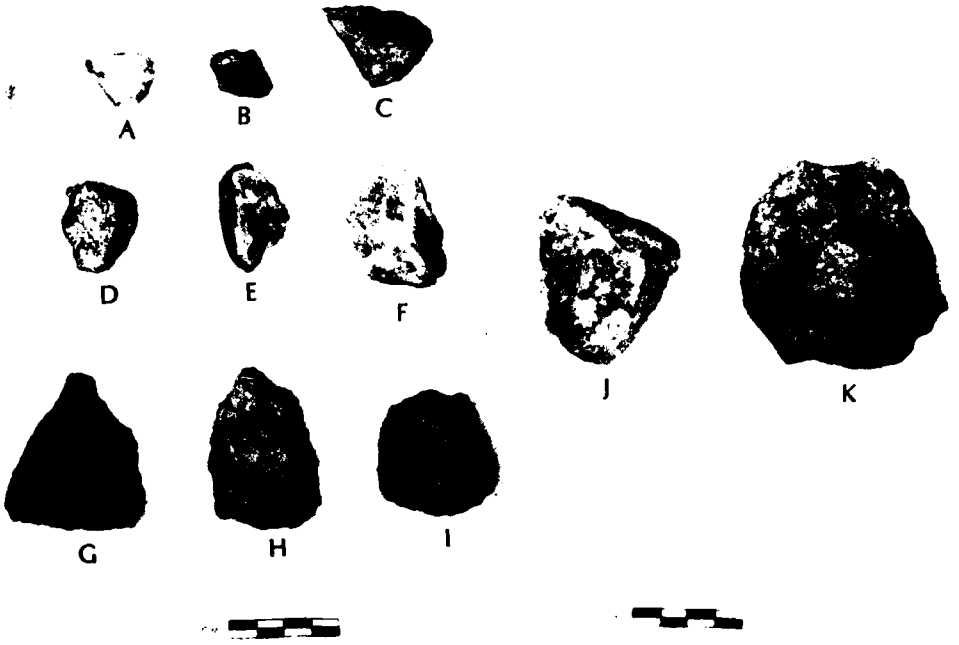


Figure 23: Artifacts from site 34-Gr-81(15).

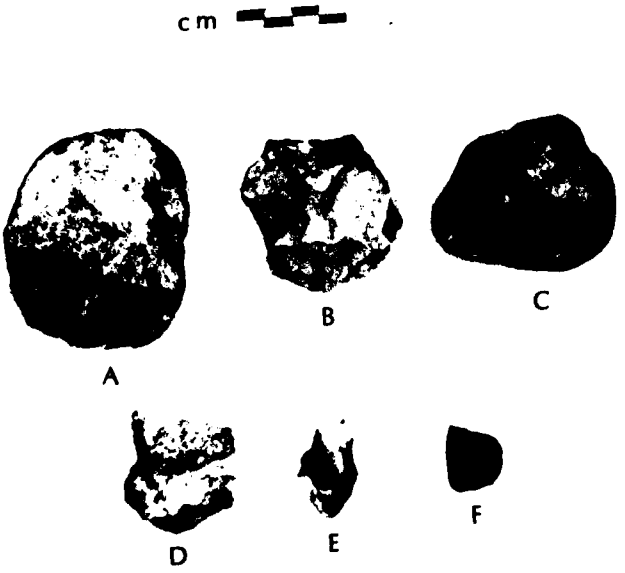


Figure 24: Artifacts from site 34-Gr-84(18).

No Historic Material

No Floral or Faunal Material

Discussion: From the kinds of tools present at the site, the implication is toward a temporary work camp. The high percentage of local material over non-local material may indicate a lack of travel or trade compared with other cultural periods in the region. No firm dates are indicated. The degree of erosion argues against any provenience of artifacts.

Recommendations: No further work is recommended at this site.

34-Gr-85 (19)

Site Description: This is a large lithic scatter of 2 acres on a south facing slope, and sitting directly at the base of the main bluff to the north. The land is classified as rough broken land, is badly eroded with a large ravine immediately to the south of the site. The proposed dam is almost two miles to the south and the nearest water is a mile downstream on the North Bank Tributary.

Field Procedures: All material except some large cobbles were collected, placed in labeled bags, and carried back to the lab.

Material Recovered: *Lithic Material*

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Scraper	1							25A
1 Small Scraper	1							25D
3 Hammerstones	1		2					25C
1 Unifacial Core	1							
1 Modified Cobble	1							25B
2 Thick Biface I		1		1				25E
1 Thin Biface I		1						25G
6 Modified Flakes	5		1					
1 Thick Biface II		1						25F
17 Total								
Flake Debris	70	5	1	19		2	1	

No Historic Material

No Floral or Faunal Material

Discussion: The location of this site appears to be a good wind break from northern winter storms by the cliff of the main bluff. The lithic material from the site indicates a fair amount of tool work and processing going through most of the stages of tool preparation. However the surface appears deflated, and as a result the chances for finding tools in situ is very slim.

Recommendations: Because of the amount of erosion damage, no further work is recommended for this site.

34-Gr-86 (20)

Site Description: This site covers one acre of ground on the east edge of North Bank Tributary three quarters of a mile north of the proposed dam. The edge of the site ends in a thirty foot vertical bank of the creek. The soil association is with the Treadway soils with red clays and little plant life support. Site appears to be somewhat deflated or eroded. Part of the site has been taken by cutting action of the creek, since flint material occurs right up to the edge of the cliff. The nearest prehistoric water source was probably a half mile downstream on the North Bank Tributary.

Field Procedures: All material indicating the presense of human activity was collected, placed in labeled bags, and carried back to the lab.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 End Scraper		1						26J
2 Thin Biface I	2							26I
1 Thick Biface I	1							26K
1 Modified Flake	1							26H
5 Total								
Flake Debris	3		3	3		2		

No Historic Material

No Floral or Faunal Material

Discussion: Artifacts from this site largely were local materials. Kinds of tools present indicate a small temporary camp, but no cultural age period is implied. The size of the site and the degree of erosion greatly decrease the value of the site.

Recommendations: No further archeological work is recommended on this site.

34-Gr-87 (21)

Site Description: This site is a half acre of slight lithic scatter covering the top of a low hill just east of North Tributary Creek. The proposed dam lies a half mile to the south. The area is badly eroded with the Treadway soils association. The nearest water is the creek bed 30 meters to the west of the site.

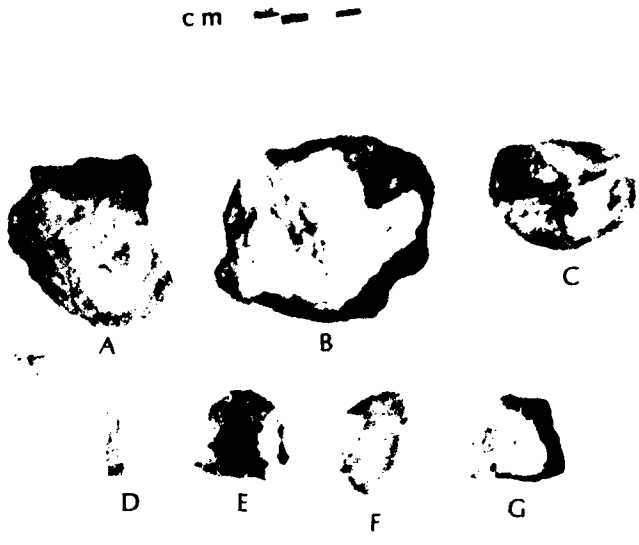


Figure 25: Artifacts from site 34-Gr-85(19).

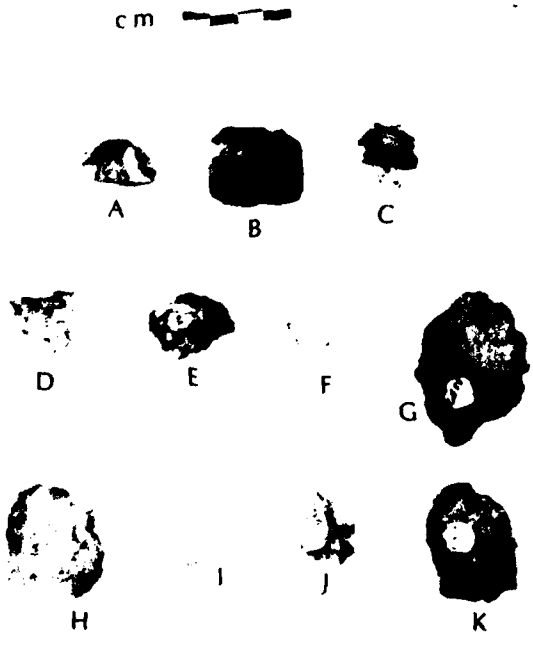


Figure 26: Artifacts from site 34-Gr-86(20), 34-Gr-88(22), & 34-Gr-89(23).

Field Procedures: All material recognized as evidence of the result of human activity was collected, placed in labeled bags, and carried back to the lab.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Irregular Gouge	1							27A
2 Modified Flakes	1			1				27B,C
3 Total								
Flake Debris	5	1	2	4				

No Historic Material

No Floral or Faunal Material

Discussion: This area barely qualifies as a site. An area 30 meters in diameter on the top of the hill produces a few tools and lithic debris. Not enough artifacts were found to estimate the function of the site or the cultural stage.

Recommendations: Due to the size and condition of the site no further archeological work is recommended.

34-Gr-88 (22)

Site Description: This area is a light lithic scatter approximately 30 meters in diameter, along the top of a low ridge which runs 100 meters west of the base of the main bluff on east of North Bank Tributary. The soil association is the Treadway of red clays and high calcium carbonate. The proposed dam lies a half mile to the south, and the nearest prehistoric source of water was the creek bed 500 meters west.

Field Procedures: All materials which indicated the presence of man was collected, placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
2 Scrapers	1					1		26E,G
1 Projectile Point	1							26F
2 Modified Flakes	2							
5 Total								
Flake Debris	5	1	4	1		1		

No Historic Material

No Floral or Faunal Material

Discussion: This area barely qualifies as a site and the small amount of material together with the erosion of the surface prevents any safe assumptions about the duration or cultural stage of the site. At least it seems probable that a small camp existed here once. Because of these problems in interpretation the value of the site is very low.

Recommendations: No further archeological work is recommended for this site.

34-Gr-89 (23)

Site Description: This was a thin lithic scatter consisting of only a few flint tools of high quality material, covering 30 meters in diameter. The surface was very badly eroded, and the land is classed as rough broken land. The proposed dam is slightly over a mile to the southwest. The nearest prehistoric source of water is probably the bed of the North Bank Tributary a half mile downstream.

Field Procedures: All material which showed evidence of the presence of human activity was collected, placed in labeled bags, and carried back to the lab.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
3 Thin Biface I		2	1					26A,B,C
1 Modified Flake	1							26D
4 Total								
Flake Debris	1					1		

No Historic Material

No Floral or Faunal Material

Discussion: From the small amount of material very little can be safely implied. The three bifaces in the early stages of production indicate a probable lithic workshop for at least a short time. Since the erosion is severe, the chances of tools *in situ* is very slim.

Recommendations: No further archeological work is recommended.

34-Gr-90 (24)

Site Description: This site also has a very minimum amount of material to be called a site. This lithic scatter covered about one-eighth of an acre on a level terrace on the south side of the large canyon which runs east from North Bank Tributary. The site is a third of a mile north of the proposed dam. The area is classed as a Cottonwood-Acme complex of soils and has outcrops of gypsum with limited forage. The nearest water would be North Bank Triburary a quarter of a mile west.

Field Procedures: All material indicating the presence of man was collected, placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Core Fragment	1							27D
1 Thick Biface I	1							27E
1 Modified Flake	1							
3 Total								
Flake Debris	4		2	1				

No Historic Material

No Floral or Faunal Material

Discussion: The predominance of local material in the tools and flakes represented may indicate a lack of trade with other groups. The artifact functional types are not represented well here, and a cultural age group is not specified. The resulting value of the site is a disappointing matter.

Recommendations: No further archeological work is recommended.

34-Gr-91 (25)

Site Description: This area covered a quarter acre of badly deflated and eroded surface of a south terrace on a large ravine running west into North Bank Tributary. The nearest water is approximately 300 meters to the west in the main creek bed. The proposed dam is a half mile south. The surface of the site is very badly eroded with nearly bare ground and four inch veins of Gypsum standing up above ground in vertical columns.

Field Procedures: All material indicating the presence of man was collected, placed in labeled bags, and carried back to the lab for analysis.

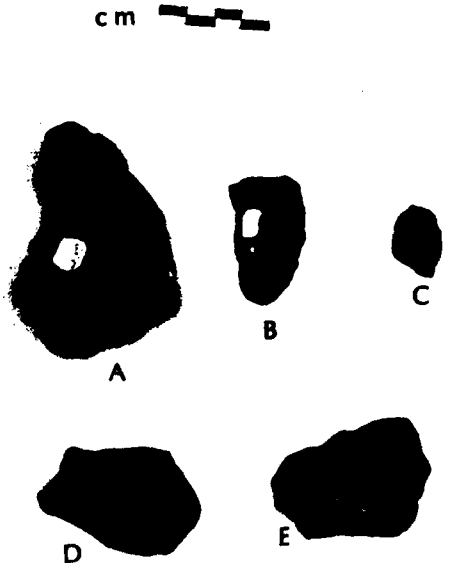


Figure 27: Artifacts from site 34-Gr-87(21) and 34-Gr-90(24).

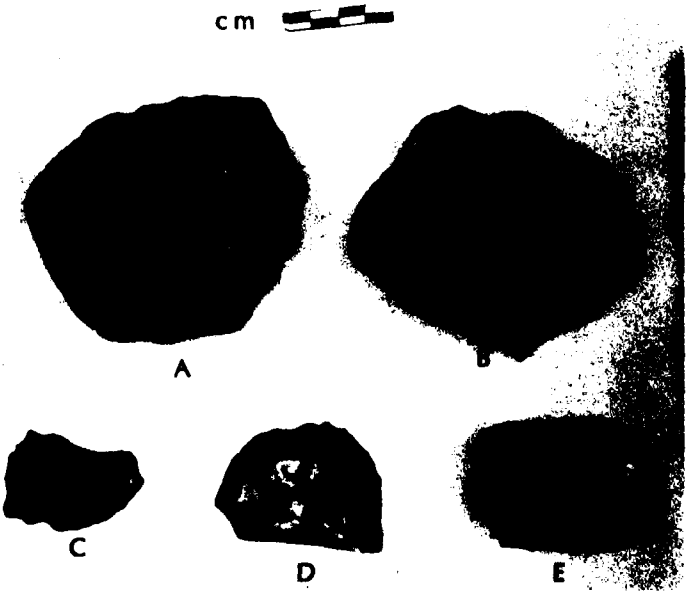


Figure 28: Artifacts from site 34-Gr-91(25) and 34-Gr-94(29).

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Cobble Chopping Tool	1							28A
1 Modified Cobble			1					28D
3 Modified Flakes	2			1				
5 Total								
Flake Debris	4	5	1	1		1		

No Historic Material

No Floral or Faunal Material

Discussion: Little can be said with this amount of material except a small amount of flint knapping occurred in the area. The surface appears so eroded and void of vegetation that it seems probable that the occupation came after the surface was eroded. This makes the value of the site very low.

Recommendations: No further archeological work is recommended.

34-Gr-92 (26)

Site Description: This site sits along the top of the main bluff on the east end of the proposed dam. Well drilling activities have destroyed the south end of the site, but the northern portion is still intact. The site consists of a lithic scatter covering about two acres in area, but long in shape approximately 300 meters from end to end. A recent road going to the well crosses the center of the site. The elevation of the site is at least 250 feet above the bed of the North Bank Tributary and about 400 meters down a very steep slope to the water in the same creek. The top of the bluff is classed as the Cottonwood-Acme complex of soils with outcrops of gypsum and limited forage.

Field Procedures: All material indicating the presence of man was collected, placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Hammerstone			1					29A
1 Mano Fragment			1					
2 Thin Biface II	1				1			29E,F
4 Modified Flakes	2	2						
1 Modified Pebble	1							
9 Total								
Flake Debris	12	13	6	6			1	

No Historic Material

No Floral or Faunal Material

Discussion: The function of the site appears to have been mainly as a temporary workshop, although the presence of a mano may mean that food preparation took place on the site. The site is eroded on the edges and does not appear to have any depth above bedrock.

Recommendations: No further archeological work is recommended.

34-Gr-93 (28)

Site Description: This is a light lithic scatter covering two acres along the top of a low ridge or terrace which runs southeast down to within a few meters of the Elm Fork. The land is classed as rough broken land, and has moderate erosion and large gravel deposits scattered along the ridge.

Field Procedures: All material indicating the presence of man was collected, placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Cobble Chopper			1					29B
1 Pebble Chopping Tool	1							
1 Modified Cobble		1						29C
4 Modified Flakes	1	3						
1 Modified Pebble		1						29D
8 Total								
Flake Debris	11	7	4	3				

No Historic Material

No Floral or Faunal Material

Discussion: This site is surrounded by gravel deposits which make excellent lithic sources for the area. Therefore the material found is exactly the kinds of tools expected at a lithic processing quarry or workshop. The artifacts are not diagnostic of any particular cultural stage or period of time.

Recommendations: Due to the wide degree of scatter over the site area, and lack of depth of cultural deposit, no further archeological work is recommended.

34-Gr-94 (29)

Site Description: This site is a historic dugout excavated into the same low ridge as site Gr-93 and sits about 100 meters to the north overlooking the Elm Fork. The dugout stands open with remains of rock lined walls and a possible door frame facing toward the northeast (see Fig. 39). It measures 21 feet from front to back, 15 feet between the front walls, and 4 feet, 2 inches below the surface. The area around the dugout and particularly downslope had scattered iron, glass, ceramics, tinware, and a few worked pieces of flint on the surface. The soil here is classified as rough broken land with little or no top soils. The pipeline route to the proposed lake appears to be about 100 meters to the north of the site, but this is an estimate due to the scale of the maps available at that time.

Field Procedures: All the material indicating the presence of man was collected, placed in labeled bags, and carried back to the lab with the following exceptions: a few large irregular pieces of an iron cooking stove, small slivers of glass inside the dugout, and a speckled, gray graniteware tea kettle. The site was surface collected in controlled areas consisting of six circular collections: (1) the dugout interior and around the front door, (2) the northwest side beside the dugout, (3) the northeast side beside the dugout, (4) the northeast slope 32 meters below the dugout, (5) both east and west sides of the dugout, and (6) a 1 meter circle on the east wall of the dugout (1 whiteware plate). Circular collection areas 2-5 were 30 meters in diameter.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Cobble Chopping Tool	1							28B
2 Modified Flakes		1		1				28C
1 Flake Scraper	1							
1 Multidirectional Core							1	28E
1 Modified Pebble		1						
6 Total								
Flake Debris	1	5	1	2				

Historic Material

A large amount of historic material was collected in the six collection areas around the dugout. All the material collected is listed in Table 1 by collection area and type of artifact. Study of the table shows concentrations of a few kinds of artifacts, but the many possible interpretations of the artifact distribution will not be analyzed in this report.

A representative sample of all the artifacts from the dugout were photographed and more detailed analysis of these items was considered important.

Table 1: Artifacts from 34-Gr-94 by Collection Area

Gr-94 Surface Collection Areas	Brown Glass	Amethyst Glass	Green Glass	Clear Glass	Aqua Glass	Blue Glass	Doll Fragments	Buttons	Stoneware	Whiteware	Iron	Nail	Lantern (Tin)	Flakes	Modified Flakes	Core	Scraper	Cobble Chopping Tool	Totals
Northwest side of dugout	11	13	1				1		7	18	1								52
Material around door of dugout and inside dugout		51		14				1	7	23	21			3	1	1			122
Both sides of dugout	1	21			1	1			2	35		1		3			1	1	67
Northeast slope just below dugout	5	8	1				1			6	4		2	3	1				31
32 meters northeast and down slope from dugout		4			1				5	13	8			4					35
Circle on cast wall of dugout										34									34
Totals	17	97	2	14	2	1	2	1	21	129	34	1	2	13	2	1	1	1	341

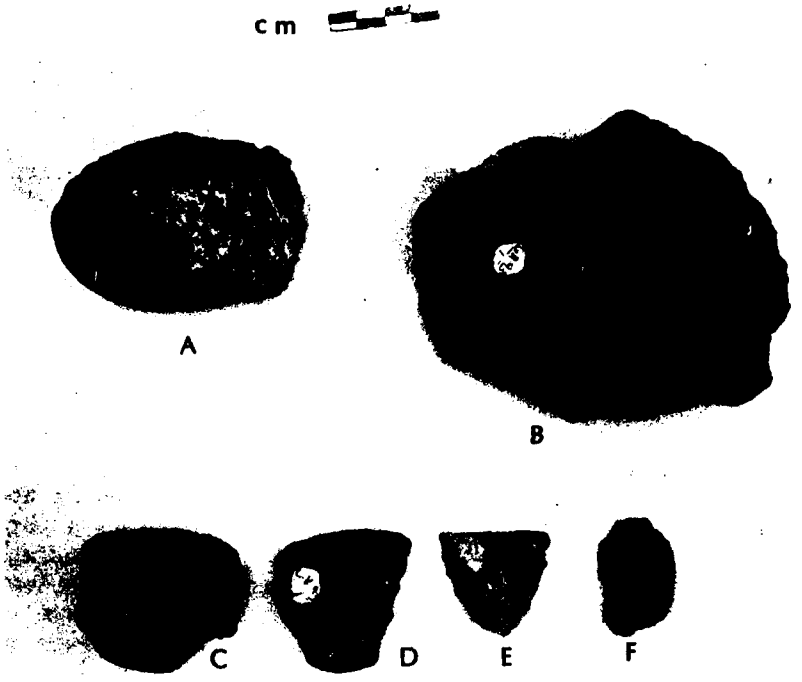


Figure 29: Artifacts from 34-Gr-92 (26) and 34-Gr-93 (28).

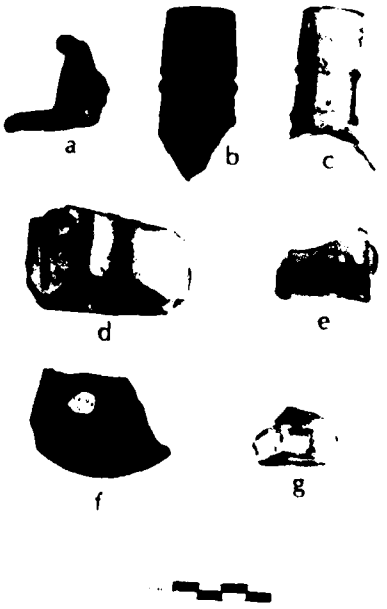


Figure 30: Artifacts from 34-Gr-94 (29).

Glass Containers

Surface collections produced a wide variety of glassware that indicated a long term occupation at the dugout. There were two brown glass whiskey or beer bottle fragments. One, (Fig. 30b) has only the neck and applied lip. Striations that go around the bottle horizontally indicate it was turned after removal from the bottle mold. The second, (Fig. 30f) is a brown whiskey or beer bottle base with no visible mold seam or trademarks. The third brown glass fragment (Fig. 30a) is a top to a medicinal bottle. It indicates a round bodied bottle from a two-piece molded form and an applied neck and lip.

There were five amethyst glass fragments which proved informative. One fragment seemed to be an amethyst whiskey flask top (Fig. 30c) with a two-piece molded neck and applied lip. Three specimens shown are amethyst medicinal bottles. One specimen (Fig. 30d) has a squared base, but no trademarks or embossing. The second (Fig. 30e) is a rectangular bottle base and panel with no trademarks or embossing. The third is a bottle base and attached side panel (Fig. 30g) with a recessed base exterior and an embossed letter "3." The last amethyst glass fragment is a portion of the top of a lamp chimney (Fig. 31h). The beaded design on the glass rim indicates a lamp made for indoor use. The estimated inner diameter of the chimney is 62 mm.

Three aqua glass bottle fragments are illustrated which indicate a longer occupation or attempts to cure ills and sickness. One specimen (Fig. 31i) is a medicinal bottle top with a two-piece molded bottle and an applied lip. The second specimen (Fig. 31j) is a portion of a medicinal bottle base which has a side panel embossed with the letters "TIVE" and another letter, "S" over the I. The third specimen is a medicinal bottle base with two side panels (Fig. 31k) but has no embossing or trademarks.

Two specimens of clear glass tumbler hint at settled domestic activity. The first specimen (Fig. 32A) is half of a base of a clear glass which has now turned amethyst due to age. The glass has vertical ribbed pattern 12 mm. apart at the centers. The second (Fig. 32B) is a rim section with a horizontal band made up of vertical embossed lines 20 mm. across.

One piece of a tin lamp burner (Fig. 32C) may match the glass chimney of Figure 31h. The specimen has only the top of the burner with a wick opening of 9/10" or 23 mm. The warped shape might alter the wick size.

Ceramics

Four pieces of white porcelain indicate an appreciation of fine ceramics and probably the presence of children. Two fragments of white porcelain saucers (Fig. 32D and Fig. 32I) both had repousse decoration, but no trademarks. The two porcelain doll fragments appear to be from two separate dolls. Figure 32G is the fragment of an arm or leg with a blue horizontal band 3 mm. wide and drawn 16 mm. from the point of body attachment. The second doll fragment (Fig. 32H) is nearly the whole arm with a diameter of 16 mm. at the attachment point to the body.

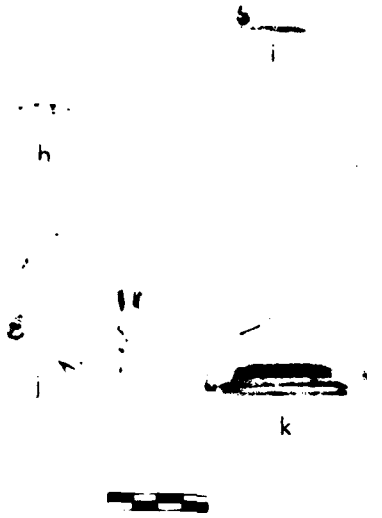


Figure 31: Artifacts from site 34-Gr-94(29).

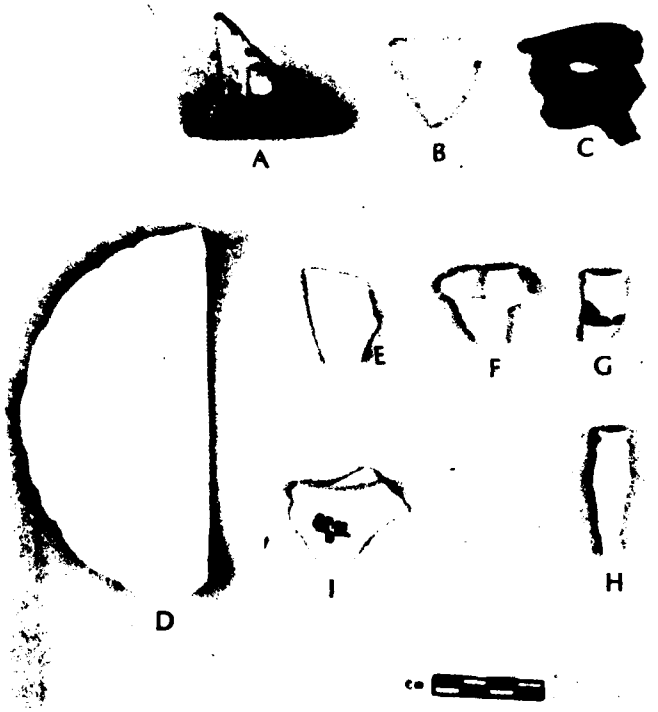


Figure 32: Artifacts from site 34-Gr-94(29).

Five pieces of ironstone imply the use of tough everyday ware. The first specimen (Fig. 32E) is a white ironstone rim sherd with leaf motif repousse. The second (Fig. 32F) is a white ironstone cup handle with no decoration. The third shown is a white ironstone plate (Fig. 33J) with a flower scroll repousse and scalloped edge. The hallmark for the plate indicates the company Alfred Meakin, England, which used a nearly exact duplicate hallmark for ceramic ware starting in 1891 (Godden 1964:426). The fourth specimen (Fig. 33K) is a white ironstone plate with a part of a hallmark in blue "amore" above the letters "PA." This hallmark could not be identified. The fifth specimen (Fig. 33L) is a reconstructed white ironstone tureen with a floral repousse decoration around the handles.

Seven pieces of stoneware are illustrated. One of the largest fragments is a mouth and handle of a jug (Fig. 35gg). Another large fragment (Fig. 35ff) has the base of a crock with a gray salt glaze on the exterior, and a golden brown interior with no trademarks. The next specimen (Fig. 35hh) is a gray stoneware body sherd with a double ridge near the rim to hold a lid. Another stoneware item (Fig. 35ii) has a brown exterior with horizontal striations. The dark brown stoneware base (Fig. 35jj) has a gray exterior and an unglazed bottom. Figure 35kk has a gray salt glazed exterior and a light brown interior. Advertising on the outside of the vessel in blue read:

CO.
WHOLE SALE & RETAIL
ARE, STOVES & TINW
...DAT...

Figure 3511 shows a gray salt glaze stoneware body sherd with golden brown interior and blue letters written on the exterior: S.
CO.

Iron materials

Four pieces of an iron stove from the dugout area are illustrated. The most interesting is an iron stove leg with raised scroll design (Fig. 34M) and the raised numbers "11-13-15" inside the leg. It could not be determined if this was a date of manufacture. The second stove specimen (Fig. 34N) is a stove door with a three leaf raised design. The third specimen (Fig. 340) is an iron stove door fragment with a draft latch and similar design. The last specimen (Fig. 34P) is an iron stove door which fits above specimen O. This piece has the same decoration and one raised letter "S" with part of another letter. Designs on these iron stove fragments imply that one iron stove was used at the dugout.

Five iron fragments indicate a variety of homestead activities. Figure 35aa is an iron tricycle or baby carriage wheel with a 10.2 mm. wide rim. The outside diameter of the axle is 15.6 mm. This item also implies the presence of children at the dugout. The second item (Fig. 35bb) is a threaded bar of 9.0 mm. in diameter with square nuts on each end being 18.4 mm. on a side. The washer has an outside diameter of 38.2 mm. on a side with an interior hole diameter of 14.2 mm. A fragment of a metal file (Fig. 35dd) with teeth on all sides and a slight taper is shown. A flat iron implement with a beveled cutting edge and a hole of 5.7 mm. in diameter is shown in Figure 35ee. This may be part of a mower blade.

No Floral or Faunal Material

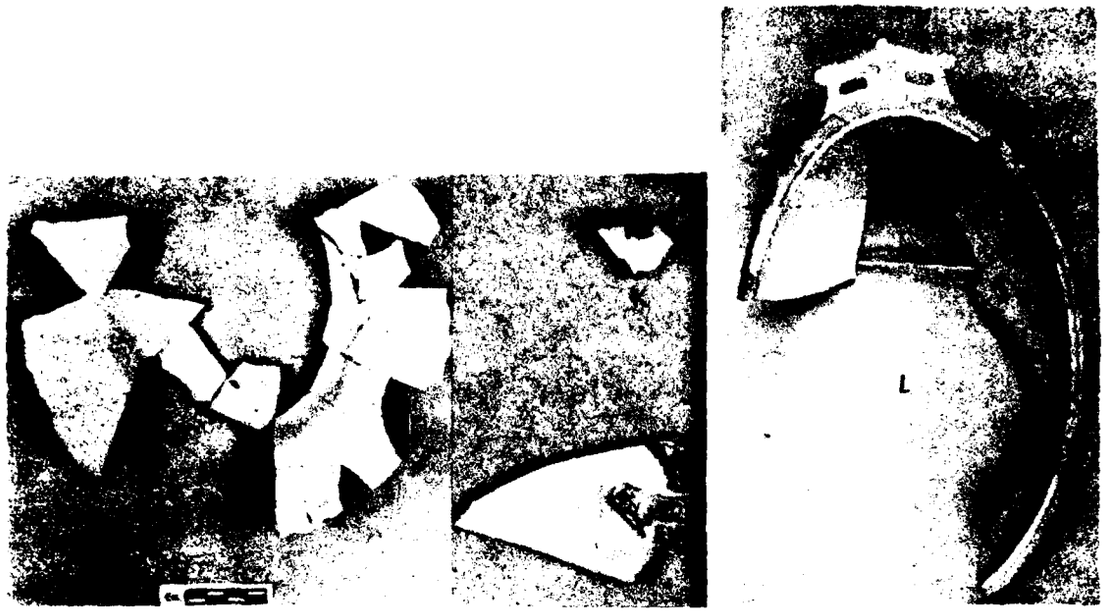


Figure 33: Artifacts from site 34-Gr-94 (29).

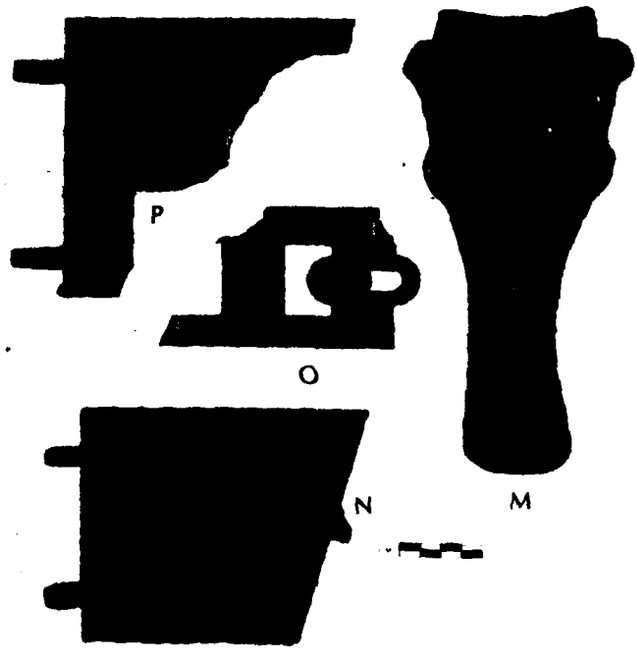


Figure 34: Artifacts from site 34-Gr-94 (29).

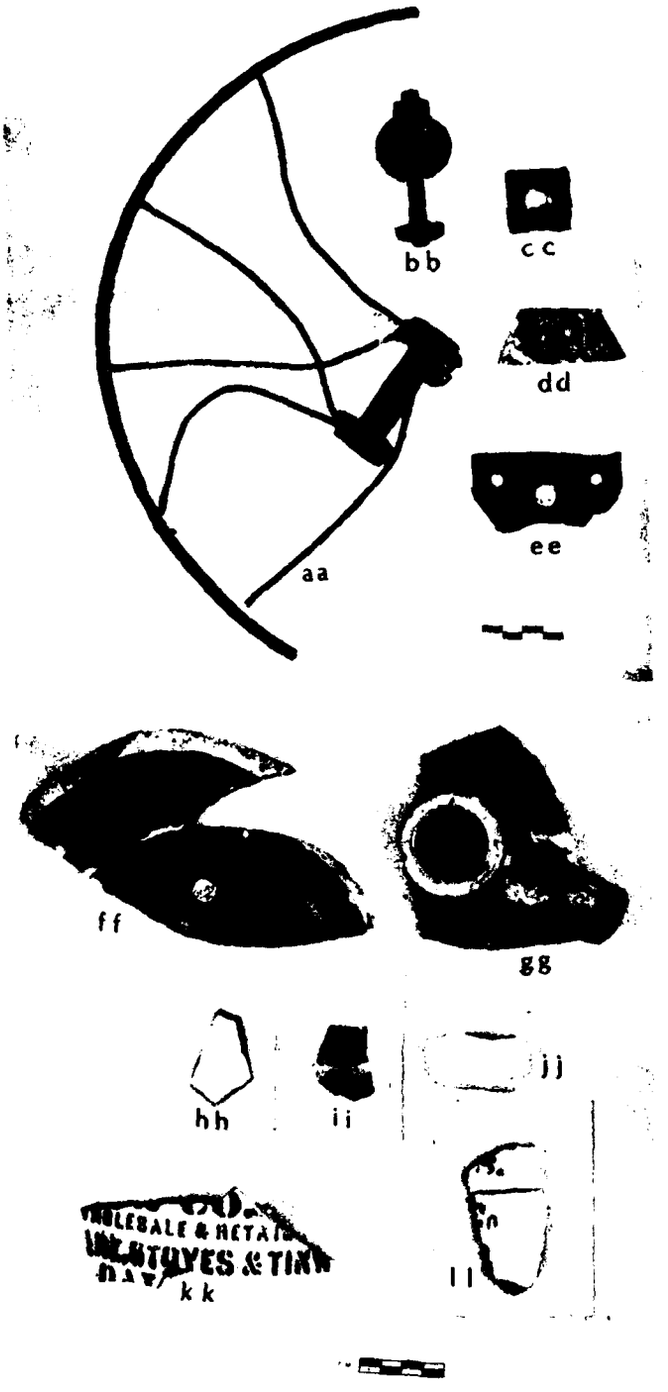


Figure 35: Artifacts from site 34-Gr-94 (29).

Discussion: The above artifacts were chosen as representative of all the material found and photographs of all these items were not practical. The combination of manufacturer's information, hallmarks information, glass color changes have reduced the possible range of occupation of this dugout. According to Spivey et al. (1977:37) the clear bottle glass manufactured before World War I contained amounts of manganese and turned an amethyst color after exposure to ultra-violet rays from the sun. This would give a range of dates for the dugout from 1880 to 1914.

Also according to Spivey et al. (1977:38) the method of manufacture which produced the kinds of mold marks on the bottles found at the dugout was largely discontinued in 1903. The numbers on the interior of the iron stove leg may be a manufacturer's date: 11-13-15, which could be November 13, 1915. Cheek (1976:44-45) suggests that round wire nails probably did not appear until the 1890's. The hallmark by Alfred Meakin Ltd. on the ironstone plate from the dugout was probably started in 1891. All of these artifacts decrease the age range probability and suggest an age of 1891 to 1915 A.D. for the occupation of the dugout. This age fits in well with the early frontier history of the area described earlier.

Recommendations: Because of the apparent undisturbed nature of this site and the moderate abundance of artifacts dating to the period before or just after Oklahoma statehood, this site has a high value historically. It is strongly recommended that it be avoided by a minimum of 10 meters on the pipeline route, and if that is not possible to mitigate any damage by extensive testing by a professional archeologist.

34-Gr-95 (30)

Site Description: This site is a light lithic scatter with two separate areas A and B. Both areas together cover a half acre and lie on the upper edge of the Elm Fork's flood plain. Area B is about 30 meters west of area A. Fish Creek is a good source of fresh water only 20 meters to the southwest. The pipeline route passes approximately 20 meters south of the site. The soil complex is classified as Spur soils and the site was exposed by fresh erosion of slopes coming down to the edge of the flood plain. The close proximity to the flood plain could indicate the possibility of a site with deep stratigraphy. No such indications of stratigraphy were observed in the field.

Field Procedures: Both areas were walked over carefully and collections made of all material indicating the presence of man. These materials were placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Multidirectional Core							1	36G
1 Projectile Point			1			1		36A,
2 Scrapers	1		1					36E,F
4 Modified Flakes	2	2						36B
8 Total								
Flake Debris	18	8	6	2		3	2	

Historic Material

The site produced four sherds of white glazed stoneware and one fragment of an iron sheet. The source of these items was not apparent and due to the close proximity of a county road may have been simply thrown out items by passers by.

No Floral or Faunal Material

Discussion: The amount of material is not large enough for very firm statements about the function or cultural stage of the site; however, a few tendencies are noted. The artifacts present are used in several kinds of activities. The projectile point resembles an Ellis type (Bell 1960:32) which has an Archaic period association in Oklahoma and Texas, and an estimated range of 1000 B.C. to 500-1000 A.D. This is the best interpretation for the site at present.

Recommendations: The small size of this site and small numbers of material produced make the value of the site less than many sites. The possibility of some depth for the site should be considered although no cultural evidence was seen in the banks of eroded gullies. The recommendation for this site is no further archeological work.

34-Gr-96 (31)

Site Description: This is a light lithic scatter over a large hill which has an extensive gravel deposit over most of its surface. The site covers approximately one acre mainly on the south face of the hill. The channel of the Elm Fork runs within 20 meters to the south of the hill. The soil here is classified as rough broken land and has little or no topsoil. There is little or no soil at all due to the eroded condition of the gravel deposit, and the site does not appear to have any depth or stratigraphy.

Field Procedures: All material which indicated the presence of man was collected placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Modified Blade	1							37A
1 Modified Cobble & M.Pebble		1	1					37E,B
2 Biface I Fragments that fit together		2						37F,G
4 Modified Flakes	1	2					1	37D
1 Gypsum Sample								37C
9 Total								
Flake Debris	6	20	6	1		1	2	

No Historic Material

No Floral or Faunal Material

Discussion: All the artifacts recovered are tools which would be expected in a lithic quarrying activity. No diagnostic types were found which fix a particular cultural age.

Recommendations: Mainly due to the lack of stratigraphy and depth of cultural deposit, no further archeological work is recommended.

34-Hr-58 (32)

Site Description: This site was a half acre area with concentrations of historical debris, and evidence of some structure. Remains of a building foundation 20 feet square, a masonry well cover, and the remains of a concrete cattle water trough were the main visible structures. The age of the material on the surface did not appear over fifty years old. The remains of a recently burned shed lay 15 meters north of the cattle trough. This shed still contained several pounds of charcoal and nails in place. The site sits on the flood plain of the Elm Fork about 300 meters north of the main channel.

Field Procedures: Only representative samples of the man-made material were collected from the site. All of the foundation, concrete trough, and masonry well cover were left in place. Samples of glass, nails and iron were collected, placed in labeled bags and carried to the lab for analysis.

Material Recovered: No Lithic Material

Historic Material

The collected historical material is not described further than the above descriptions since the site is so recent and unimportant. No photos of the artifacts were prepared for the same reason.

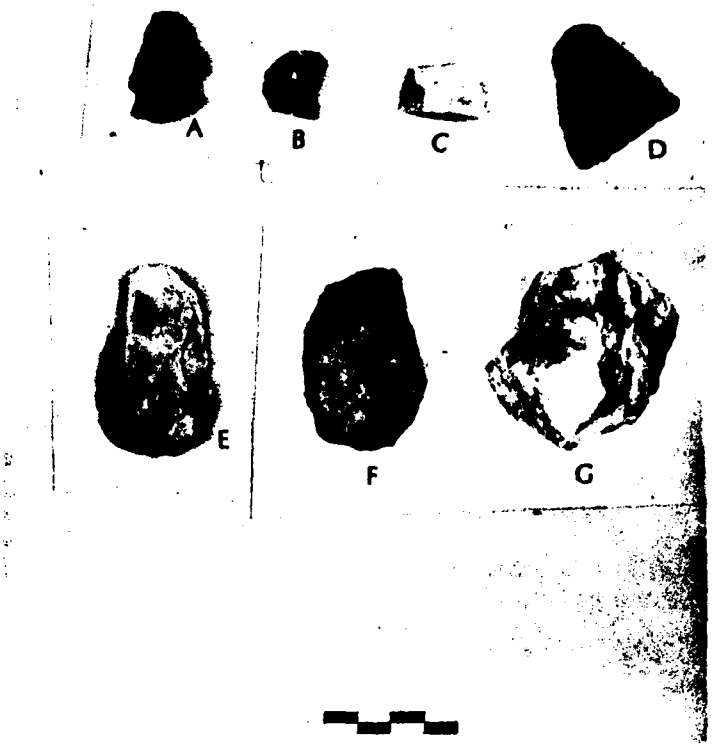


Figure 36: Artifacts from site 34-Gr-95(30) and 34-Gr-77(5).

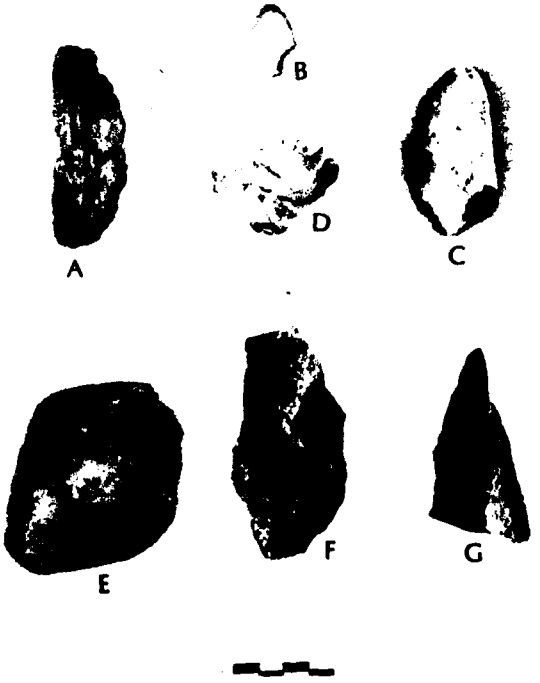


Figure 37: Artifacts from site 34-Gr-96(31).

No Floral or Faunal Material

Discussion: This site is the historical remains of a small shed and accompanying structures less than fifty years old.

Recommendations: Due to the young age of the site no archeological work is recommended.

34-Hr-59 (33)

Site Description: This is an area of one and a half acres of lithic scatter covering the top of the main bluff immediately south of the Elm Fork and just south of the proposed pumping station and dike channel. The soil association here is Vernon complex of very shallow depth or bedrock. The site is elevated above the bed of the Elm Fork at least 40 vertical meters.

Field Procedures: All material indicating the presence of man was collected, placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Clear Fork Gouge	1							38E
1 Cobble Chopping Tool	1							38A
1 Cobble Chopper	1							38C
1 Chopping Tool	1							
1 Cobble Side Scraper	1							
1 Thin Biface I			1					38L
4 Thick Biface I	3	1						38B,D,F,H
1 Projectile Point						1		38I
1 Core	1							38G
1 Scraper-Graver		1						38K
7 Modified Flakes	7							
1 Multidirectional Core	1							
1 Flake Scraper	1							38J
1 Cobble Core	1							
1 Modified Cobble		1						
24 Total								
Flake Debris	66	2	2	5		2		

No Historic Material

No Floral or Faunal Material

Discussion: The collection of artifacts and the position of the site on the terrain indicate several activities such as food preparation,

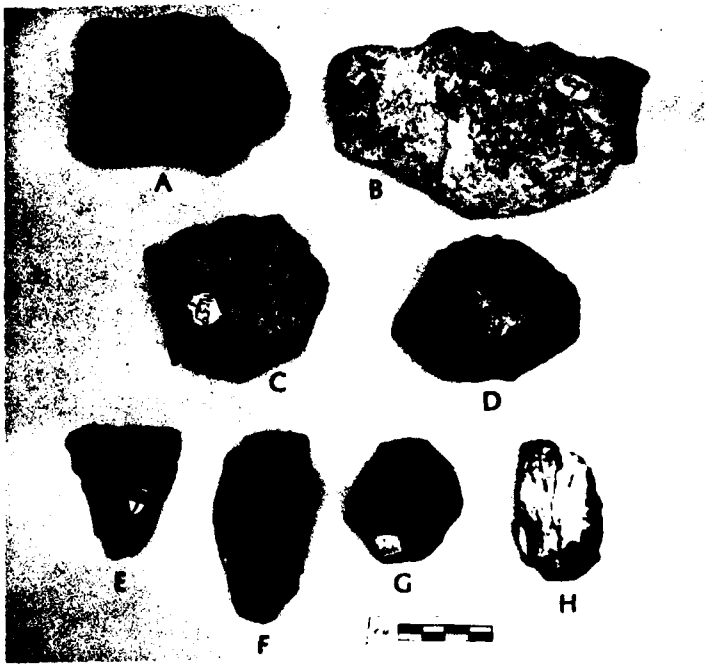


Figure 38: Artifacts from site 34-Hr-59(33).

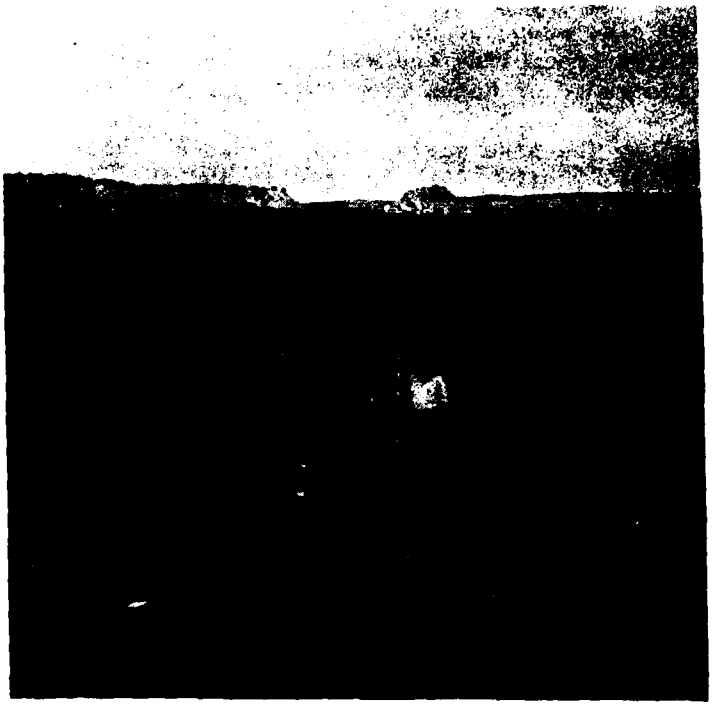


Figure 39: Site 34-Gr-94(29) (historic dugout) looking northeast.

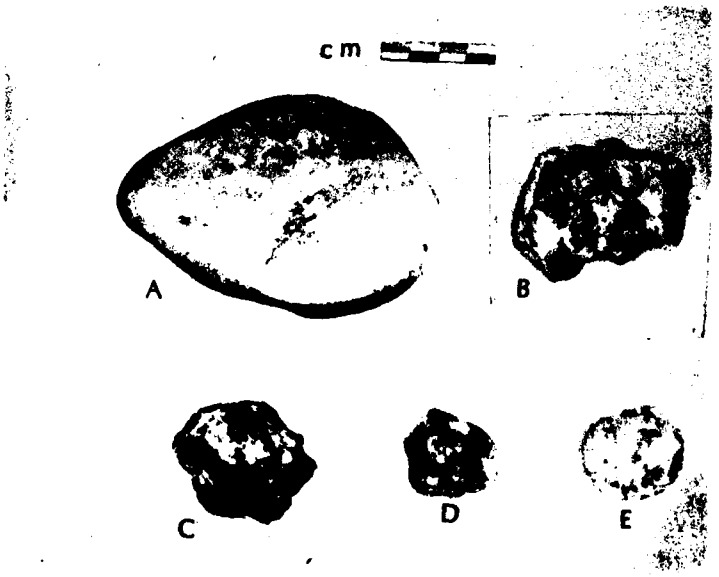


Figure 40: Artifacts from site 34-Hr-10.

flint knapping, and hide preparation. The one projectile point found on the site was a base resembling the Williams type (Bell 1960:96). This type has a wide range of dates from 4000 B.C. to 1000 A.D.

Recommendations: The site surface has almost all bedrock exposure and very little soil. Because of this and the lack of a large amount of artifacts, no further excavation is recommended.

34-Gr-77 (5)

Site Description: Here two lithic tools from an area 3 meters in diameter is counted as a site. This location was at first thought not to be a site, and after examination of the tools the idea was reconsidered and it was put back on the list. The site sits on the south edge of a large ravine which drains east into a branch of North Bank Tributary Creek. The site is a half a mile north of the proposed dam and the nearest water is about a mile downstream. The terrain is classed as badlands.

Field Procedures: All material indicating the presence of man was collected, placed in labeled bags, and carried back to the lab for analysis.

Material Recovered: The two tools recovered were extremely well made. The midsection of a projectile point was finely worked alibates, and the Clear Fork Gouge made from Ogallala quartzite was one of the best shaped examples in the whole survey (See Fig. 36 c and d).

No Historical Material

No Floral or Faunal Material

Discussion: The two artifacts recovered hint at an old camp site of Archaic age. The site was eroded, and any provenience was probably lost. The small artifact sample and the erosion factor decrease the estimated value of the site.

Recommendations: No further archeological work is recommended.

34-Hr-10

Site Description: This is a light lithic scatter covering about 10 acres on the first two hills northeast of the Elm Fork and the bridge on highway 30. Shaeffer reported this site with Lawton Aspect type of quartzite in 1960. The two hills themselves have large gravel and cobble deposits. The terrain is classed as rough broken land and the nearest water would be the Elm Fork a quarter of a mile south.

Field Procedures: All material indicating the presence of man was collected, placed in labeled bags, and carried back to the lab.

Material Recovered: Lithic Material

Tool Categories	Material Types						Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.Misc.	No.
1 Disc Scraper			1				40E
2 Plano Convex Cores		2					40B,C
1 Multidirectional Core	1						
1 Modified Pebble		1					
2 Modified Cobbles			2				40A
3 Modified Flakes	1			2			40D
10 Total							
Flake Debris	10	7	6	1		1	

No Historic Material

No Floral or Faunal Material

Discussion: The location of this site on a large gravel deposit is most significant for the existence of the site. The kind of material recovered is typical for lithic workshops and this is probably what this site represents.

Recommendations: Because of the small amount of material and the eroded surface of the site, no further archeological work is recommended.

Isolated Finds

A total of 39 tools were found scattered throughout the survey area and not associated with any other artifacts. Most of the tools are like choppers and scrappers found on the sites. The only unusual specimens were a Carrollton-like projectile point, and a round flat mano that was badly worn. Due to the location of these finds on steep slopes, and eroded or disturbed provenience: no data will be presented on these items. No pattern of distribution in the survey area was evident in these finds.

Tested Sites

34-Gr-67 (4)

Site Description: This is the largest site covered in the survey being approximately a half mile long and containing 40 acres (See Fig. 41). The area consists of a light lithic scatter on a long low ridge between two creeks which run toward the southeast into the North Bank Tributary. A well used dirt road has been dozed from one end of the site to the other. The soil complex is classified as badlands and Treadway soils association with a few centimeters of topsoil present. The creek on the north edge of the site has good fresh water holes all year round. The site lies directly

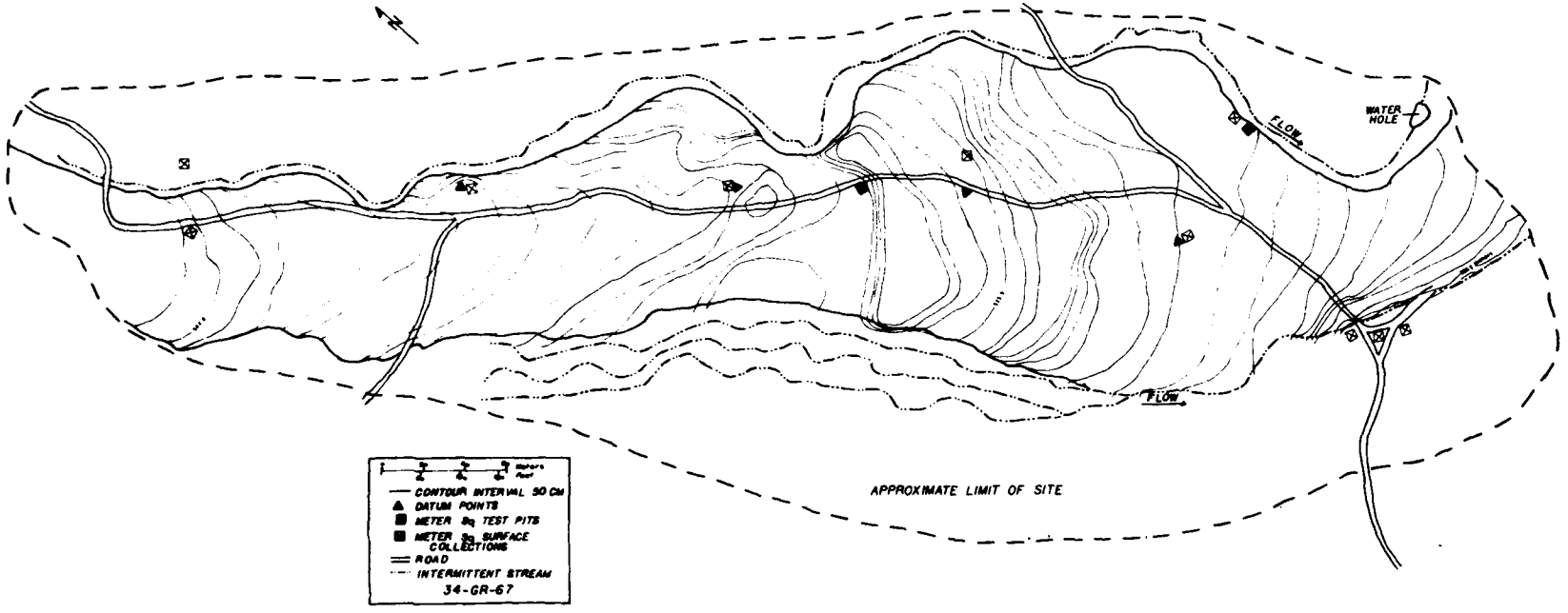


Figure 41: Map of site 34-Gr-67(4).

along the axis of the proposed dam and extends beyond on both north and south sides. The Elm Fork is one mile to the southwest.

Field Procedures: Several controlled procedures were used to collect and test this site. Because of the greater abundance of tools present on this site than others in the valley, the first controlled collections picked up only tools or modified flakes. After the entire site had been collected in this manner the site was mapped. Then the locations of projectile points found by survey workers and amateurs were noted.

Two one-meter square test pits were then dug using shovels, trowels, and ¼ inch mesh hardware cloth to screen all dirt. Ten centimeter arbitrary levels were used throughout, and all materials indicating the presence of human activity was placed in labeled bags for analysis later. The location of these test pits are shown on Figure 41. Both test pits produced very little material and were starting into sterile subsoil in the second levels (see Fig. 47-48).

After the test pits were completed, ten one-meter square surface collections were made scattered randomly from one end of the site to the other. Within these ten collection areas all flakes and tools were taken. The collection squares were laid out at random positions, but they produced very little material. These ten collection squares produced the following material:

1. (no material)
2. (no material)
3. 1 flake
4. 10 flakes
5. (no material)
6. 7 flakes
7. (no material)
8. (no material)
9. 1 flake
10. 1 flake

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Benton Metal arrowpt.							1	42E
1 Frio Dart point						1		42D
1 Bonham arrowpoint						1		42I
2 Fresno arrowpoints						2		42F,L
1 Table Rock point			1					42J
1 Massard arrowpoint						1		42B
1 Abasolo or Catan point		1						42K
1 Ellis-like point			1					42A
1 Unclassified point							1	42C
2 drills						2		42G,H

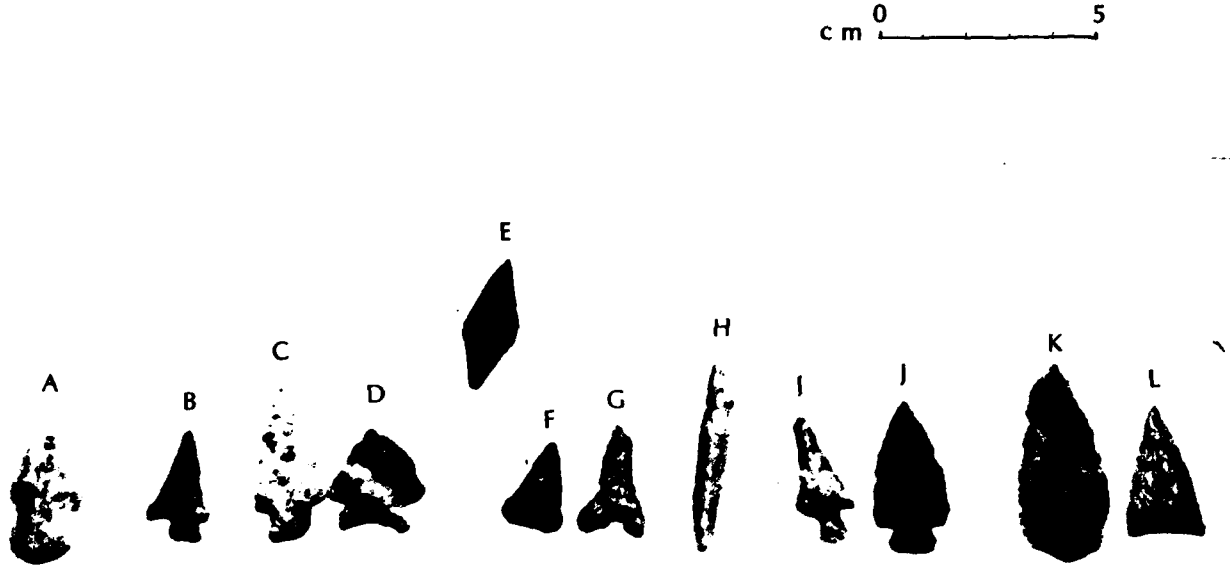


Figure 42: Artifacts from site 34-Gr-67 (4).

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Dallas-like dart point							1	43M
1 Yarbrough-like dart pt.	1							43L
1 arrowpoint base			1					43N
1 end scraper							1	43G
1 disc scraper	1							43I
1 thumbnail scraper		1						43H
8 Flake scrapers	5	2					1	43A,C,44G, 44K,D,45A
1 projectile pt. midsection			1					43J
1 cobble scraper	1							45G
2 core fragments		2						45F
1 Ellipitical core			1					45E
2 Plano-convex cores	1	1						
1 small core				1				
1 hammerstone			1					45B
2 gouges	2							45D,44C
4 Cobble Chopping Tools	4							45H,I
2 Cobble Choppers	1		1					45C
1 Pebble Chopping Tool				1				
3 Chopping Tools	3							
1 Modified Pebble	1							
2 Thin Biface II	1	1						43E
2 Thin Biface III	2							44M,N
10 Thick Biface I	8		1	1				43B,F 44B,D,E,J,L,P
2 Thick Biface II	1	1						44F,H
5 Thick Biface III	3	1	1					43D,K,44A,I
34 Modified Flakes	24	5	2	1			2	
102 Total								
Flake Debris	167	64	29	17	3	18	18	

No Historical Material

No Floral or Faunal Material

Discussion: This site covers a good portion of the central valley of the North Bank Tributary and seems a good location for small and large camp sites. The close proximity of a good water supply in an area of bad water is significant. The wide variety of cores, scrapers, choppers, drills, arrow and dart points indicate a multicomponent visitation by many groups through time including Archaic and Protohistoric cultures. Due to a lack of extensive cultural deposition and a lack of stratigraphy the site occupations do not appear to be of an extended length.

Recommendations: Although this site produced a large amount of material from the surface collections, the two test pits showed that there was no cultural stratigraphy or depth of cultural material. Because of this lack no further archeological work is recommended. This action may seem strange on the basis of two test pits for such a large site, but Gr-67 has two fast eroding streams on both the north and south sides of the site, and vertical banks the entire length showed no stratigraphy of cultural material (see Fig.41).

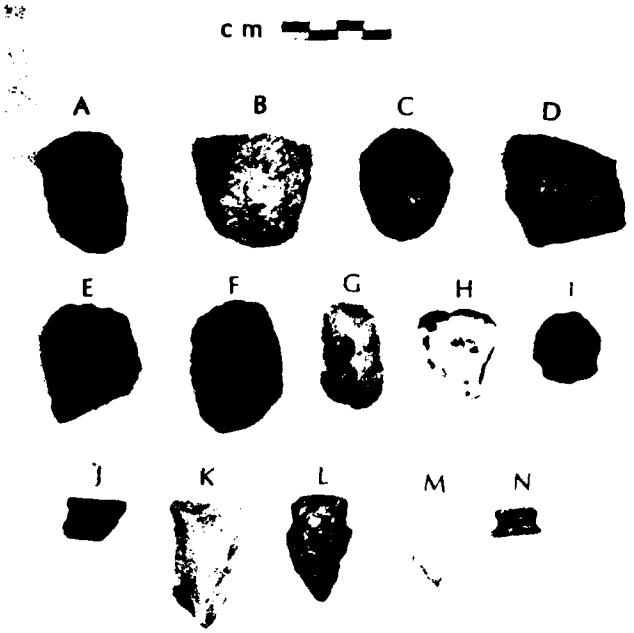


Figure 43: Artifacts from site 34-Gr-67 (4).

Figure 44: Artifacts from site 34-Gr-67 (4).

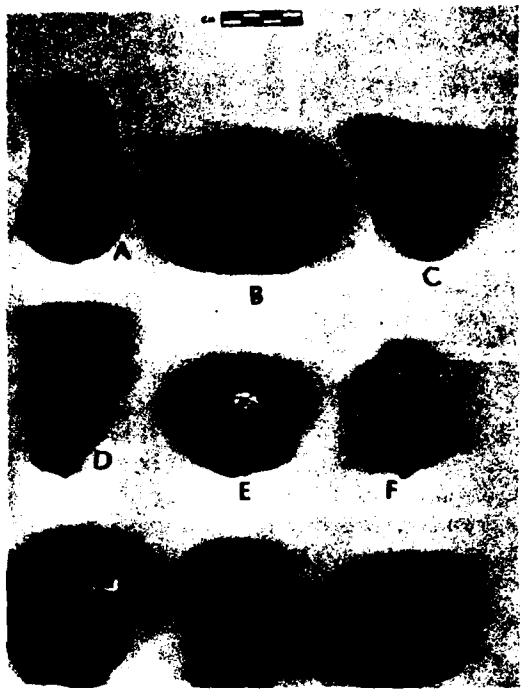


Figure 45: Artifacts from site 34-Gr-67(4).

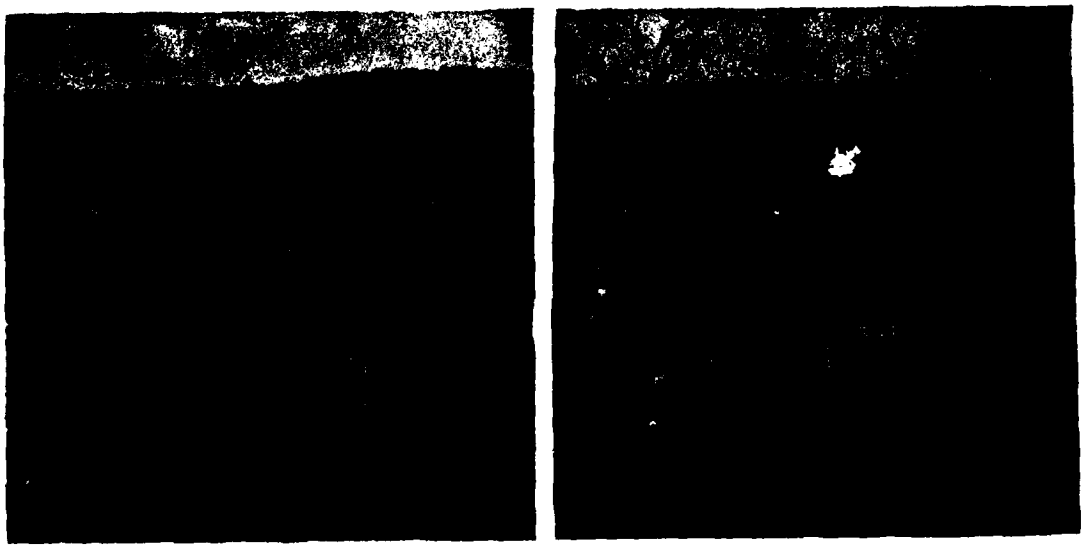


Figure 46 & 47: Site 34-Gr-67(4) test pits 1 and 2.

34-Gr-68 (8)

Site Description: This site is a lithic scatter directly west of a modern pond dam which impounded the west branch of North Tributary Creek. The site is half a mile north of the brine lake dam and covers about two acres of ground. It is bounded on the south by a large ravine and on the northwest by the main bluff (see Fig. 48). The site covers the top of a low, flat terrace on topography classed as rough broken land with little or no topsoil. The pond dam on the east end of the site destroyed that end of the site and increased erosion in that section.

Field Procedures: On the first visit to the site all material indicating the presence of man was collected, placed in labeled bags, and carried back to the lab. Some time later the site was maped using steel tapes and a brunton compass due to rainy weather. Finally a one-meter test pit was dug approximately in the center of the site using the techniques and equipment already mentioned. The test pit only went down one level before hitting gypsum bedrock and sterile ground. The first level produced 7 flakes, and it became apparent that all the cultural material was right on the surface.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
2 Projectile Point Tips		1	1					49A,B
2 Projectile Points		2						49I,P
1 Thin Biface I	1							49J
2 Thin Biface II	1					1		49D,C
6 Thick Biface I	4	2						49H,L,M,Q,U,W
2 Flake Scraper	1		1					49E,N
1 Thick Biface III	1							49K
1 Graver			1					49F
2 Knife Fragments	2							
15 Modified Flakes	8	5	1			1		49G
1 Hammerstone			1					49O
3 Cobble Chopping Tools	1	1		1				49R,T,V
1 Core	1							49S
39 Total								
Flake Debris	29	10	7	8		3	3	

No Historic Material

No Floral or Faunal Material

Discussion: The only two whole projectile points recovered are not typical types. One is a rough form resembling a Trinity Archaic type. The other point has a large expanding stem and vaguely resembles a large scallorn point, but is not assigned that type here. The other artifacts indicate a lithic workshop or a small base camp. There are not enough diagnostic tools present so no cultural period is proposed.

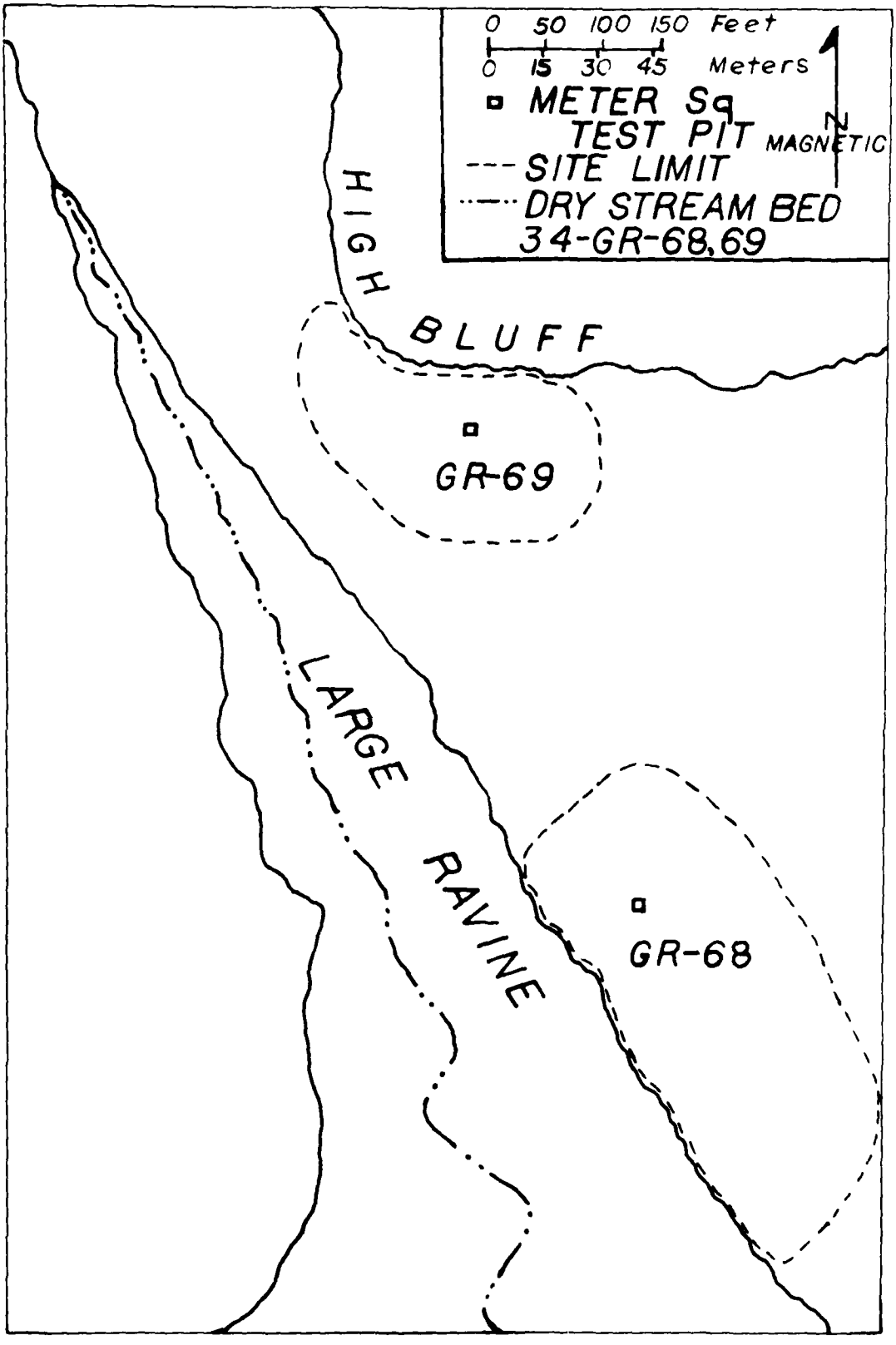


Figure 48: Map of site 34-Gr-68(8) and 34-Gr-69(9).

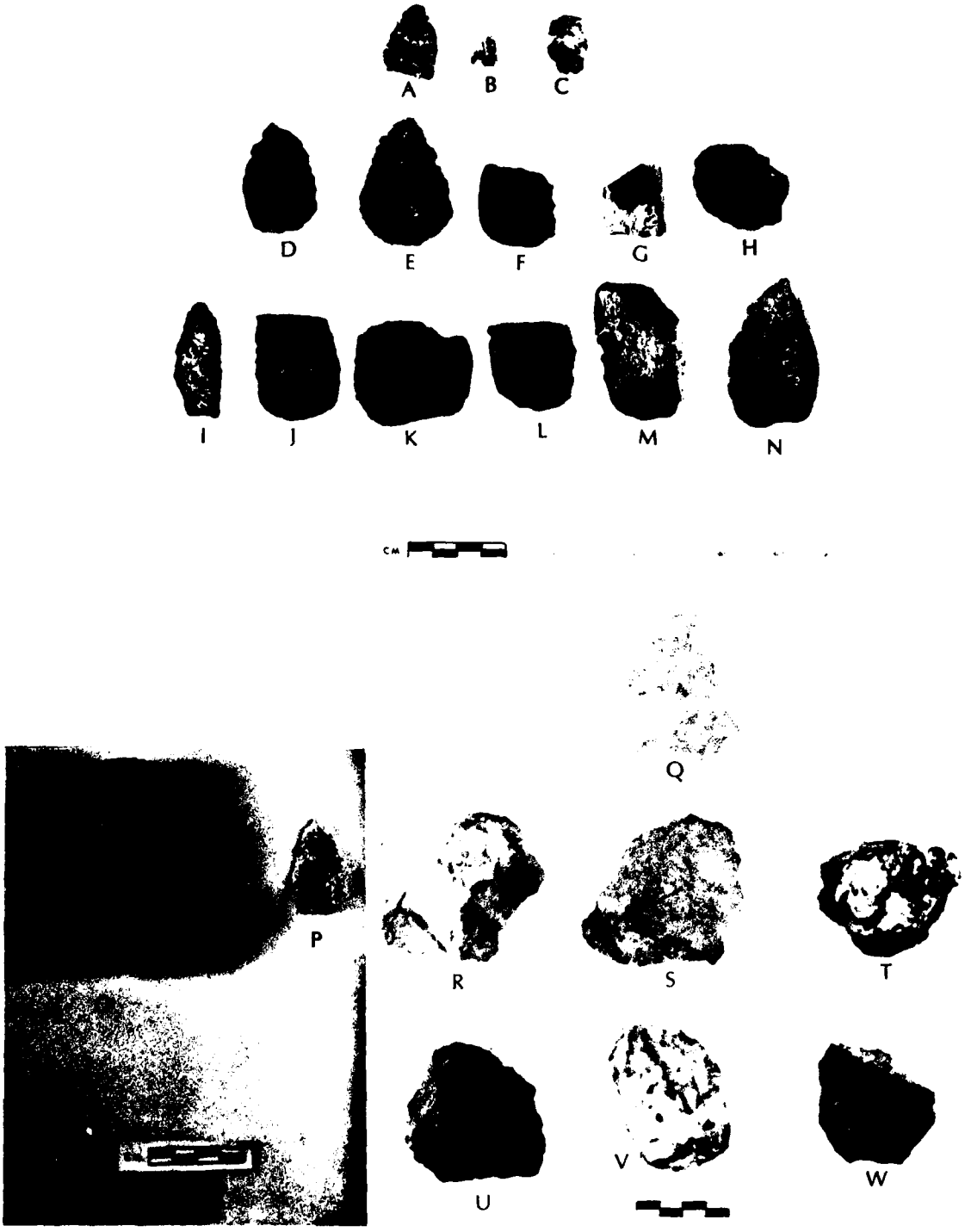


Figure 49: Artifacts from site 34-Gr-68(8).

The meter square test pit only produced seven flakes in the first level, and none in the second. Gypsum bedrock appeared in the floor before the second level was finished. From these results the evidence is strong that the site only has material on the top few centimeters.

Because of the shallowness of the site and erosion's effect on artifact provenience, the site is given a low potential for producing data.

Recommendations: No further archeological work is recommended.

34-Gr-69 (9)

Site Description: This site is just up the sloping terrace west from site Gr-68 and is against the base of the main bluff to the west. The site is a lithic scatter covering one and a half acres around the base of this bluff (see Fig. 48). A large ravine lies just to the south of the site and the topography is classed as rough broken land with very little top soil. The nearest permanent water was probably one mile downstream in prehistoric times.

Field Procedures: All material was collected which indicated the presence of man, placed in labeled bags, and carried back to the lab for analysis.

Recovered Material: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Trifacial Tool	1							51C
1 Mano			1					51D
1 Hafted Drill (without shaft)				1				50E
4 Projectile Point Fragments	3		1					50A,B,C,D
1 Scraper-Graver	1							51A
4 Scrapers	1			1		1	1	52C,F,G,M
3 Thin Biface II	1	1				1		52B,D,E
1 Thin Biface III	1							52J
4 Thick Biface I	3	1						52K,H,I
1 Core Fragment				1				52A
1 Pebble Chopping Tool	1							
1 Broken Clear Fork Gouge	1							
1 Modified Cobble	1							51B
3 Modified Flakes	1							52L
3 Modified Pebbles		3						
1 Cobble Chopping Tool	1							
31 Total								
Flake Debris	57	16	16	20		4	1	

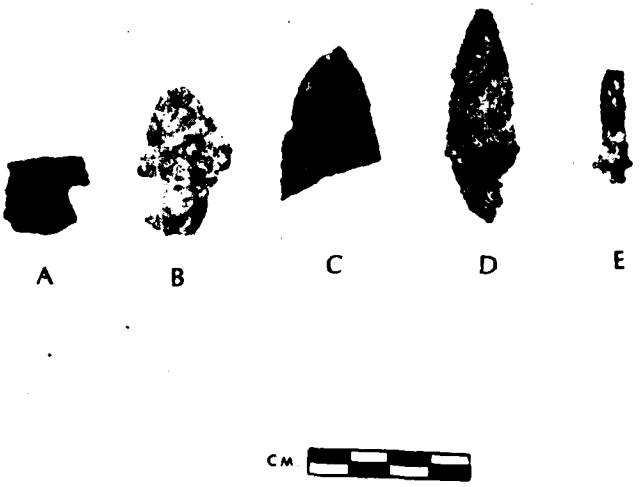


Figure 50: Artifacts from site 34-Gr-69(9).

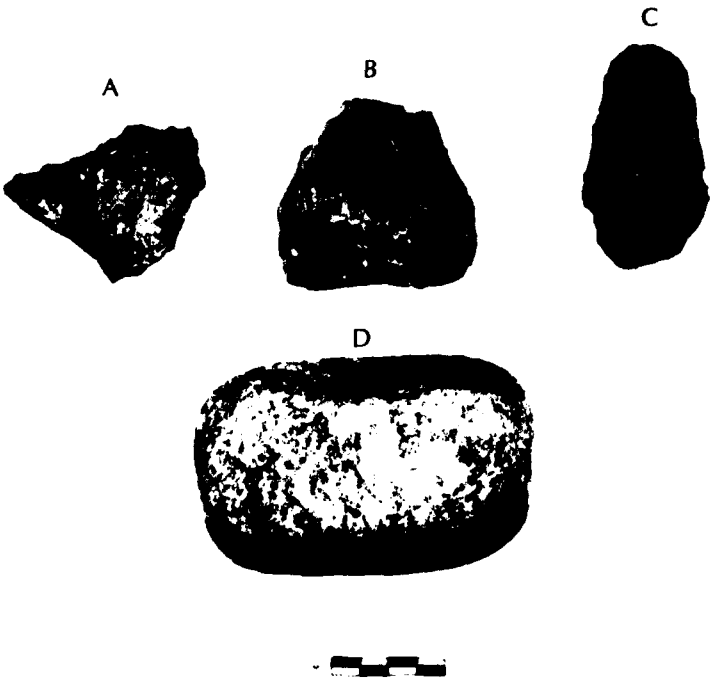


Figure 51: Artifacts from site 34-Gr-69(9).

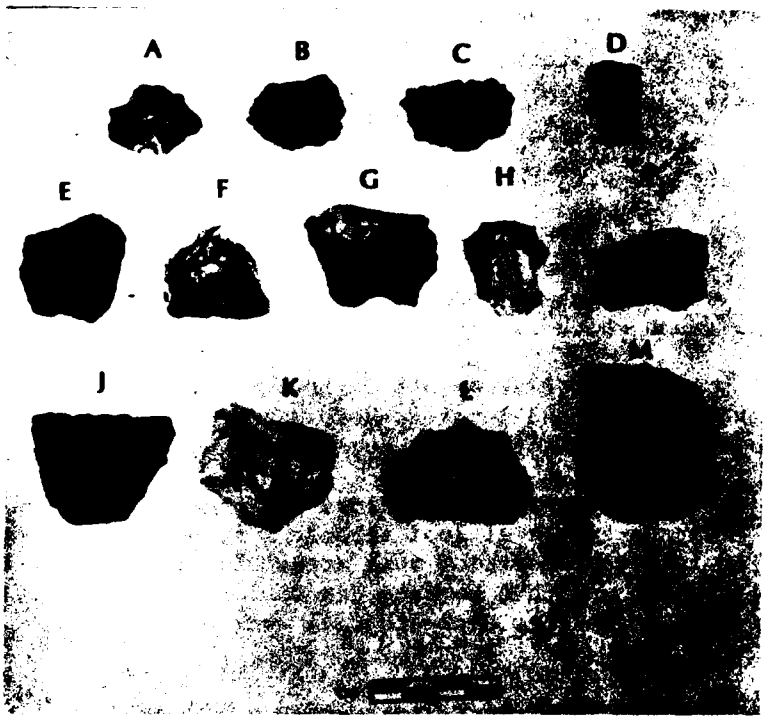


Figure 52: Artifacts from site 34-Gr-69(9).

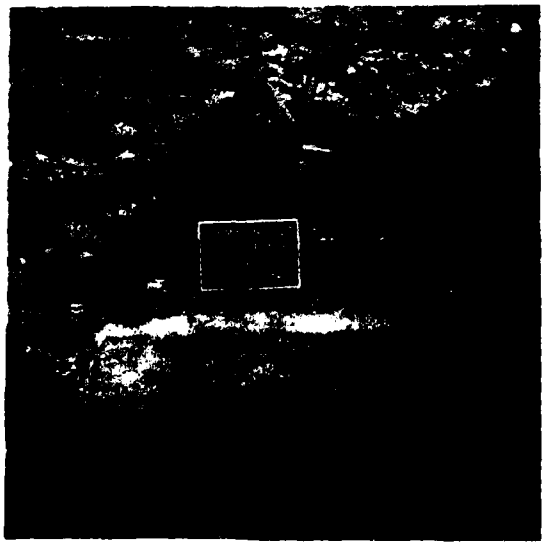


Figure 54: Site 34-Gr-70(27), test pit 1.

No Historic Material

No Floral or Faunal Material

Discussion: The projectile points recovered strongly resemble Ellis, and Williams types, and possibly a Gary, which implies the Archaic or early Woodland cultural period of 4000 B.C. to 1000 A.D. The drill, scrapers, gouge, graver, and modified flakes indicate base camp types of activities, such as food and hide preparation. An unusual trifacial tool was found which is discussed in the conclusions (Fig. 51C).

The test pit produced 10 flakes in the first level with one core-cobble and nothing in the second level. There was no top soil stratigraphy and the soil present seemed to be decayed gypsum bedrock.

Recommendations: The surface collections produced some interesting artifacts, some (like the trifacial tool already mentioned) could not be found duplicated in site reports of this area. In spite of the artifacts, the severe erosion and thin surface deposit of the site result in a recommendation of no further archeological work.

34-Gr-70 (27)

Site Description: This site is a lithic scatter that covers about three acres of the flat top of a terrace above the flood plain of the Elm Fork. The site runs up to the base of a ridge running southeast from the main bluff (see Fig. 53). The surface is badly eroded and classed as rough broken land. The nearest good water would be the Elm Fork Channel a half a mile southwest of the site. The route of the proposed pipeline appears to run a few meters to the southeast of the site.

Field Procedures: All material which indicated the presence of man was collected, placed in labeled bags, and carried back to the camp, except for what appeared to be a large hearth. The one test pit was placed on the corner of this feature and excavated down two levels before hitting sterile hard gypsum in the second level (see Fig. 54). The test pit produced one small fragment of a tool, and 21 flakes in the first level and only a couple of flakes in the second level.

Material Recovered: Lithic Material

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
4 Fire Spalls	4							55A
12 Modified Flakes	12							55B
1 Flake Hoe(?)	1							55C
1 Cobble Chopping Tool	1							55D
1 Bifacial Core		1						55E
1 Irregular Core	1							55J
1 Thick Biface I		1						55F

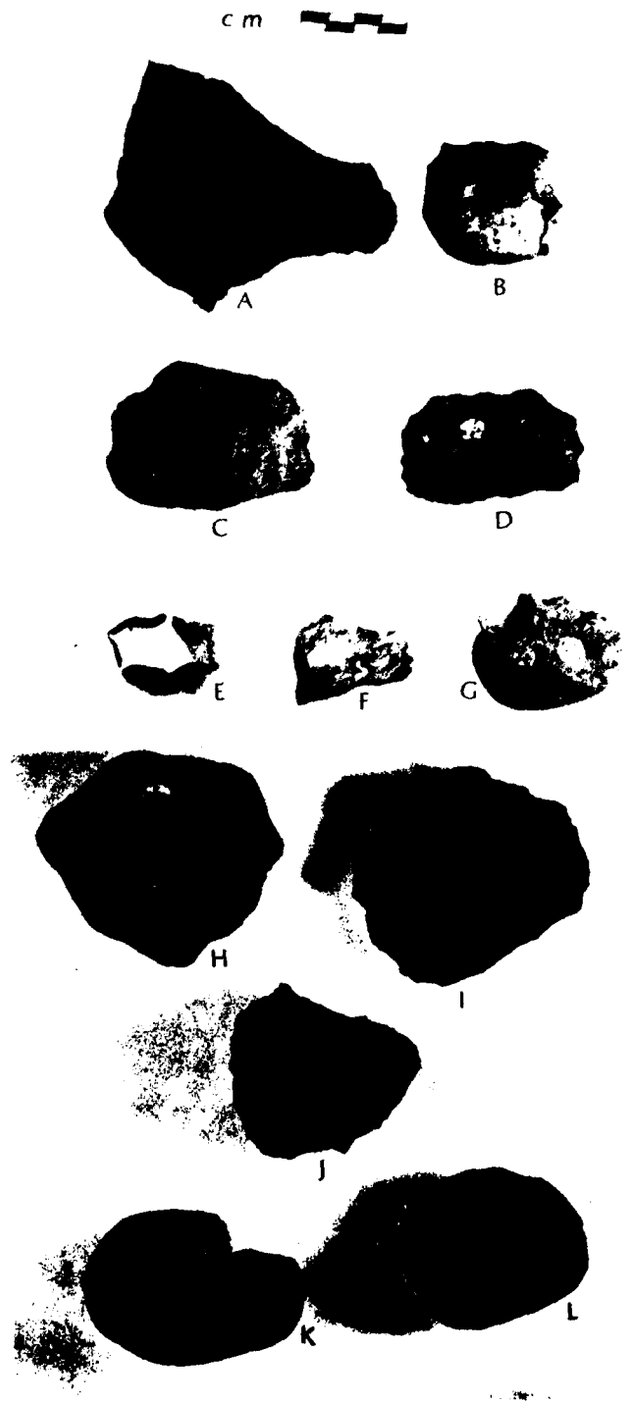


Figure 55: Artifacts from site 34-Gr-70 (27).

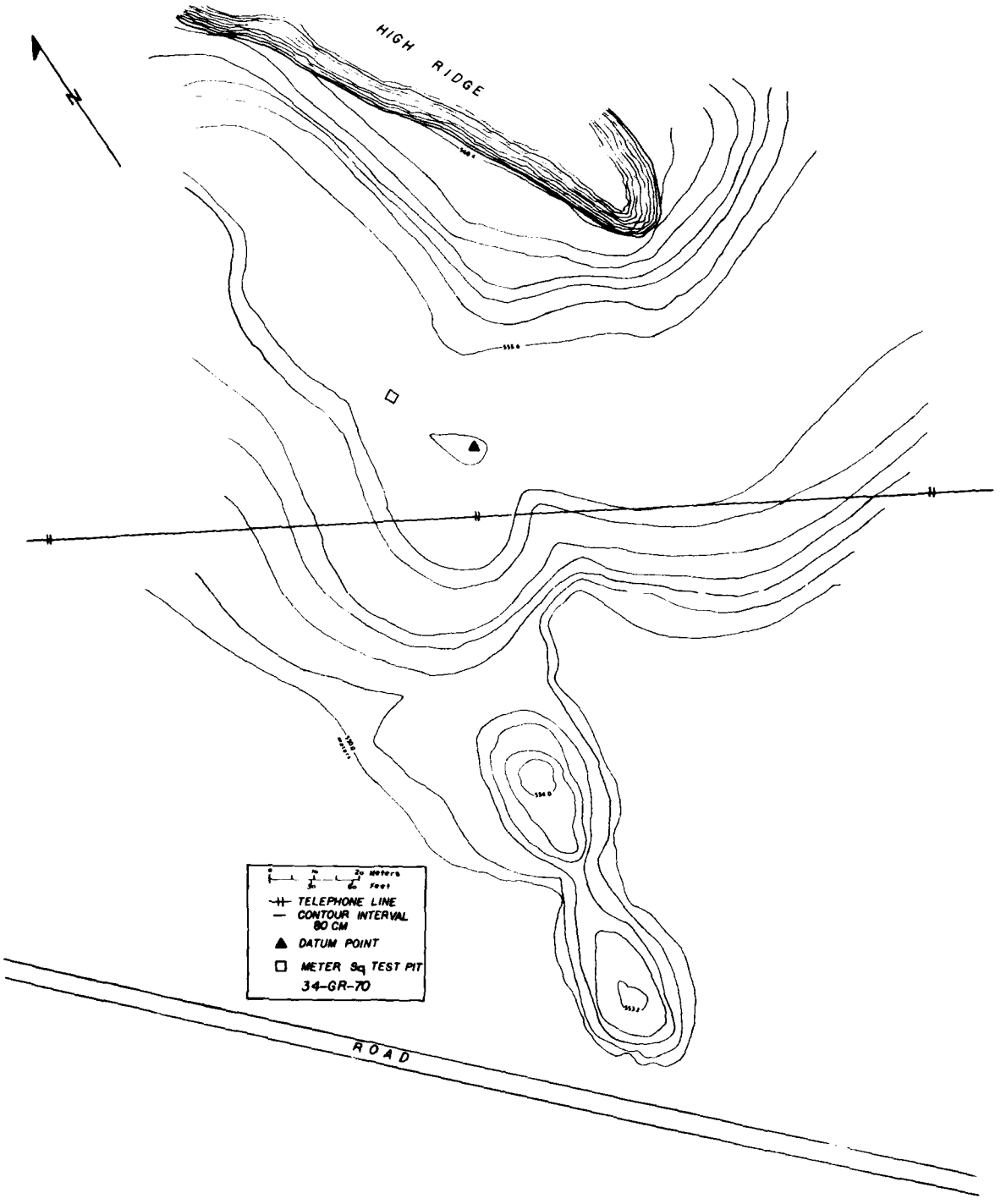


Figure 53: Map of site 34-Gr-70 (27).

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
1 Flake Scraper	1							55G
1 Cobble Chopper	1							55I
1 Modified Cobble	1							55H
1 Reassembled Hammerstone			1					55K
1 Battered Hammerstone			1					55L
26 Total								
Flake Debris	146	30	79	17	1	6	4	

No Historic Material

Floral or Faunal Material

One humerus bone of a small animal was found on the surface.

Discussion: Although this site produced a larger variety of lithic material than most of the other sites, there were no diagnostic tool types found. The area around the feature does appear to be some kind of a tool processing location. However due to the lack of finished tools the occupation was likely a very temporary station and no depth of deposit or stratigraphy was detected in the test pit.

Recommendations: Because of the kinds of lithic material produced and the eroded surface, no further archeological work is recommended for this site.

34-Hr-39 (The Chisum Site)

Site Description: This site covers approximately 40 acres on the low edge of the Elm Fork flood plain, just south of the river (see Fig. 56). The site seems clustered around a line of trees 400 meters along the south edge of the river channel and immediately east of the state highway bridge which is across the Elm Fork (Fig. 57).

The site lies on a nearly level flood plain with a Yahola soil complex of alluvial topsoil. The main channel of the Elm Fork is only 30 meters north. The edge of the flood plain is actively eroding into the river channel, but the level top of the flood plain is well covered in grass, mesquite, and juniper. Most of the artifacts recovered came from the top edge of the flood plain.

Field Procedures: The first collection made from the surface of the site was controlled to only take tools or tool fragments. Each spot where a tool was found was marked with a nail and tag (numbered 1 through 12) and later maped in (see Fig. 56). These tool locations indicated a concentration where the first test pit was placed. A second test pit was dug about 20 meters northeast of the first and on the bottom

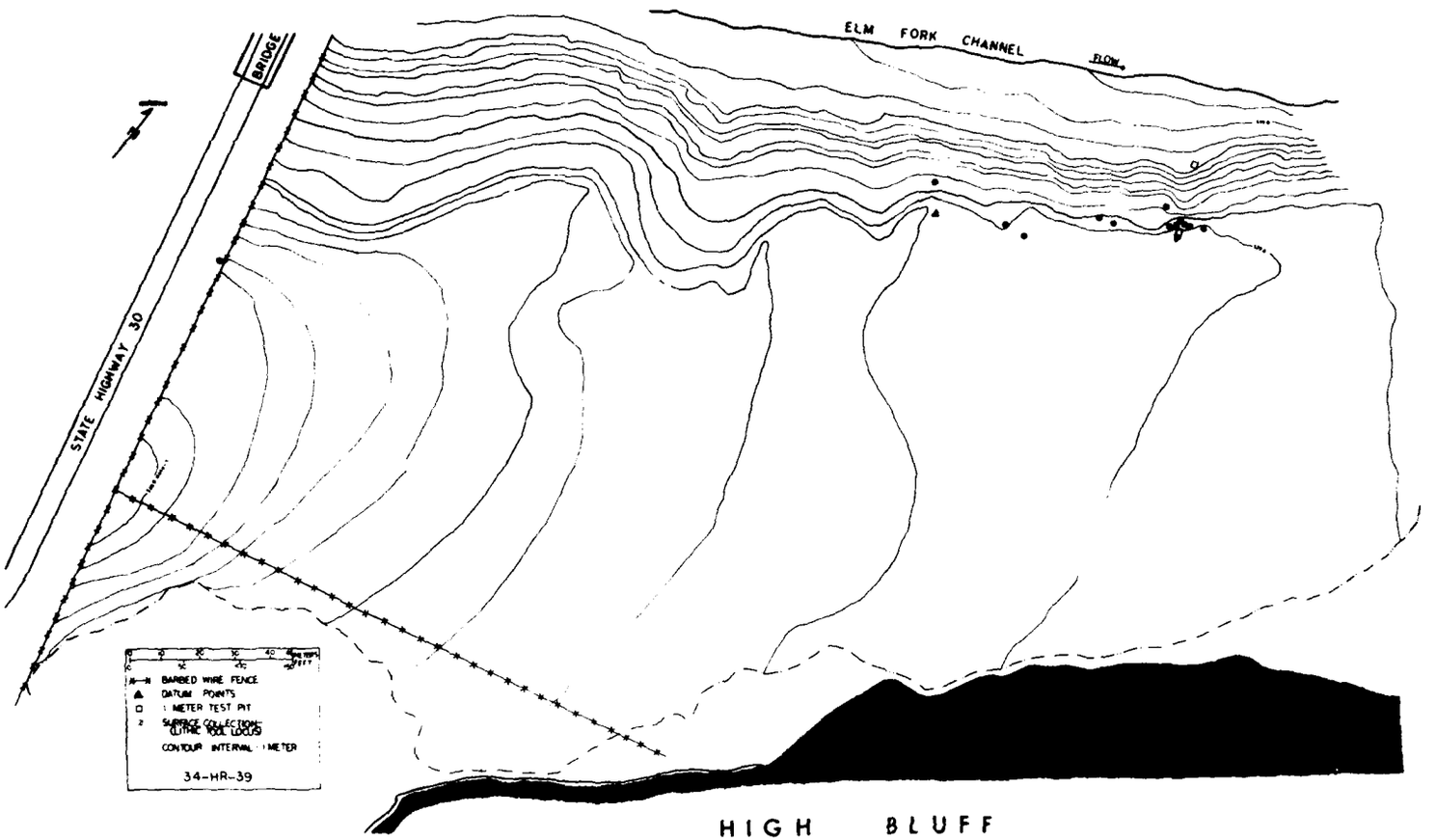


Figure 56: Map of site 34-Hr-39.

Figure 57: View of the Chisum Site, 34-Hr-39, looking southeast across the Elm Fork of the Red River.

Figure 58: The Chisum Site, 34-Hr-39, test pit 1 (west wall profile).

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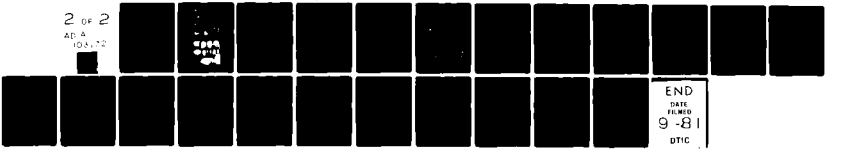

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edge of the slope. This second test pit produced absolutely nothing and was stopped after the second level.

Material Recovered: Lithic Material

The first test pit at the top of the slope was the most productive test pit dug of the total seven that were dug for the whole survey (see Fig. 58). The levels from the test pit 1 yielded the following artifacts from the surface down:

Level	No. of Flakes	Tools
1	21	1 Thick Biface I, 1 Modified Flake
2	46	1 Large Thick Biface III, 1 Graver, 1 Small Thumb Scraper
3	17	1 Biface Blank, 1 Modified Flake
4	28	2 Thin Biface II, 1 Hammerstone
5	13	2 Modified Flakes
6	15	2 Modified Flakes, 1 Modified Cobble, 1 Ground Stone Fragment
7	10	1 Hammerstone, 1 Modified Flake, 1 Thin Biface II
		19 Total

Tool Categories	Material Types							Fig.
	Og.	P.W.	Qtzt.	Tec.	Ed.	Alib.	Misc.	No.
Special Surface Collection								
1. Thick Biface II	1							59-1
2. Thick Biface III	1							59-2
3. Thick Biface I		1						59-3
4. Graver		1						59-4
5. Thick Biface I	1							59-5
6. Thick Biface I	1							59-6
7. Plano Convex Scraper	1							59-7
8. Biface Blank			1					59-8
9. Concave Side Scraper	1							59-9
10. Thick Biface II	1							59-10
11. Large Thin Biface II	1							59-11
12. Modified Flake	1							59-12
Rest of site - not already listed								
1 Thick Biface I	1							60F
1 Thick Biface III			1					60B
1 Thin Biface II								60I
1 Thick Biface II	1							60D
1 Thumbnail Scraper						1		60G
4 Modified Flakes	1	1	1	1				
2 Hammerstones			2					60A,E
1 piece of Stoneware								60K
2 Gravers		1				1		60H,J
1 Biface Blank			1					60C
46 Complete Total								
Flake Debris	144	22	80	6		5	27	

Figure 59: Special surface collection from 34-Hr-39.

Figure 60: Artifacts from site 34-Hr-39.

No Historic Material except the one piece of stoneware listed.

Floral or Faunal Material

On level 6 (50 to 60 cm), test pit one produced a small piece of badly decayed bone and a small fragment of charcoal. Unfortunately these items were too small to have C-14 tests run. Nevertheless, the presence of charcoal and bone indicates the presence of campsites or pits in the area and could be very useful in future excavations. The soil samples taken from each 10 cm level of test pit one were tested for pH reaction, phosphate, and organic matter. These results are presented here from the surface down:

Level	pH	Phosphate	Organic Matter
1.	7.7	48	1.9
2.	7.9	26	2.1
3.	7.7	14	1.4
4.	8.1	11	1.1
5.	8.1	2	2.1
6.	8.1	2	0.7

The chemical analysis seemed to indicate that the organic and phosphate content drops off around the 5th or 6th level, which may be an indication of the extent of the depth of the site, the cultural material of the test pit. The last level (60 to 70 cm) dug in the test pit was still producing enough material to warrant digging further, but due to a limit on time and resources it was necessary to stop at that point. The soil profile (Fig. 58) at the surface showed a gray-brown silty clay changing to a reddish brown clay at 45 cm depth.

Discussion: This site was visited by Hughes in 1973 when a variety of tools were found: 6 projectile points including one paleo-Indian base, 10 blanks, 2 gouges, 3 choppers, 8 scrapers, and one core. Taken together with the material and excavations done in 1978, the Chisum site, 34-Hr-39, appears to be a valuable site dating back to Archaic or early paleo-Indian times with some base camp activities and stratigraphy evident at least down to 70 cm. It is one of the few known sites of this period in the area which is not badly eroded.

Recommendations: The site is a valuable prehistoric resource and damage should be avoided. If the proposed project's impact upon the surface cannot be avoided extensive mitigation is necessary. At this time not enough is known about the site to nominate it to the National Register of Historic Places, but it may reach that level after more thorough testing. Further discussion of the possible options proposed and suggested minimum amount of mitigation for the site is presented in the section on specific recommendations which follows.

Summary and Special Recommendations

There are several important points that should be made concerning this survey and the comparison of all the sites separately or taken together against other regions.

A complete list of measurements for the projectile points from all sites is presented in Table 2. The reference to the Thomas Formula on this table represents an attempt to use the method and formula proposed by D. H. Thomas (1978:461-471) for dividing projectile points into arrow points or dart points. The results were somewhat disappointing, since the predicted categories by Thomas's method were almost exactly reversed by the writer's more subjective categories. The data is included here, but the formula deserves a much larger test before a final judgement is made on its usefulness.

A similar list for the Clear Fork Gouges recovered at all sites is given in Table 3. Comments and cultural interpretation has already been given for these items and this data is presented for basic research and comparisons by professional archeologists.

One small group of tools is unusual enough to deserve some further comment; these are the trifacial tools. Two of these tools are shown in Figs. 61A-B. They resemble a thick, heavy blade which has been shaped into an oval outline and struck (either directly or indirectly) several times on both ends. Like the Clear Fork Gouges found in this area these trifacial tools are usually made of Ogallala quartzite. Only two whole examples of this proposed tool type were found, but broken parts are shown in Figs. 19A and 55D. The ideal type of these tools is not well defined by the examples in this survey, but a pattern seems to be suggested.

To summarize all the sites in the report, most of them had so little archeological material that the site descriptions already given are an adequate evaluation. It seems likely that most of the sites found represent short occupations by groups passing through the area. Based on the records of visits by historic tribes to salt sources noted by Redfield (1976), it seems quite possible that similar tribal patterns of salt utilization could occur in the drainage of the Elm Fork survey area. The use of this salt would even make more sense if the sites were used as a camp either going to or coming from buffalo hunts on the southern plains. This hypothesis is supported by the most common occurring types of projectile points from the North Bank Tributary drainage. These points most resemble the Ellis and Williams types which were also found in two bison kill sites (Twilla and Bell) in the Texas Panhandle (Hughes 1977) less than 100 miles from the project area (see Fig. 62).

Table 2. All Projectile Point Data (in millimeters)

Site Number	Length	Width	Thickness	Stem Length	Stem Width	Stem Thickness	Notch Width	Material	Thomas Formula	Weight in grams
34-Gr-67	32.2	25.5	7.1	9.5	9.6	4.8	9.4	Frisco	Dart	4.5
34-Gr-67	*	20.1	4.4	7.3	11.8	3.6	9.1	Quartzite	-	-
34-Gr-67	40.3	24.6	7.7	13.3	21.1	-	19.0	Ogallala	Arrow	7.4
34-Gr-67	32.4	13.3	1.3	-	-	-	-	Iron	-	-
34-Gr-67	30.1	14.5	4.3	7.8	6.9	3.2	4.9	Alibates	-	2.8
34-Gr-67	25.8*	16.6	3.6	-	-	-	-	Alibates	-	3.0
34-Gr-67	26.0	15.2	3.7	6.2	3.1	-	6.8	Alibates	-	2.0
34-Gr-67	24.2	23.1	4.5	8.7	17.6	-	13.6	Alibates	-	3.0
34-Gr-67	31.4	18.6	3.9	-	-	-	-	Alibates	-	2.5
34-Gr-67	20.9	14.5	3.9	-	-	-	-	Alibates(?)	-	1.1
34-Gr-67	35.3	17.9	4.1	6.7	11.4	-	8.6	Quartzite(?)	-	4.0
34-Gr-67	45.0	21.6	7.4	-	-	-	-	Petrified Wood	-	9.5
34-Gr-67	48.5	7.8	4.6	-	-	-	-	Alibates	-	3.0
34-Gr-68	41.9	24.8	7.1	7.5	17.1	-	13.7	Petrified Wood	Dart	6.5
34-Gr-69	41.0	25.2	7.4	12.9	*	6.3	11.2	Ogallala	Dart	6.5
34-Gr-69 (drill)	29.8*	12.4	5.0	4.9*	-	-	6.6	Tecovas	-	1.5
34-Gr-69	*	*	6.8	11.7	19.2	9.5	11.3	Quartzite	-	-
34-Gr-69	54.6	19.4	8.8	13.1	10.5	-	11.0	Ogallala	Dart	-
34-Gr-79	47.6	19.8	8.2	8.8	19.4	-	19.0	Petrified Wood	Arrow	9.5
34-Gr-95	36.6*	24.0	7.6	10.4	20.9	-	17.3	Quartzite	Arrow	5.5
34-Hr-59	*	*	*	12.3	19.4	-	14.5	Alibates	-	-
Isolated Find	37.8	25.7	6.7	9.5	12.0	5.2	11.1	Alibates	-	5.8
Isolated Find	35.2*	20.3	4.7	*	*	*	10.3	Tecovas	-	3.2

*Broken

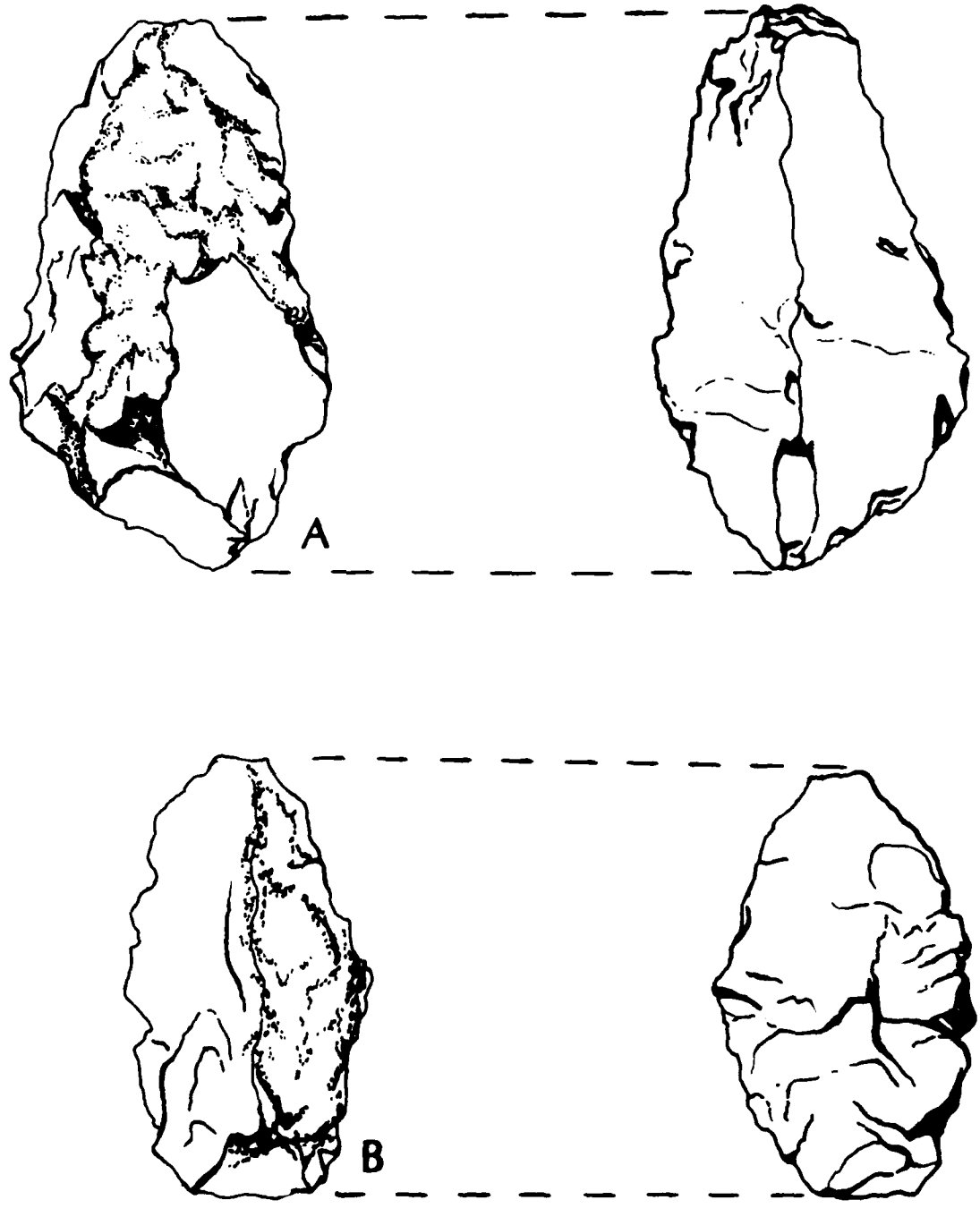

Figure 61: Two trifacial tools.
(Actual) A. 34-Gr-69(9).
(Size) B. Isolated Find.

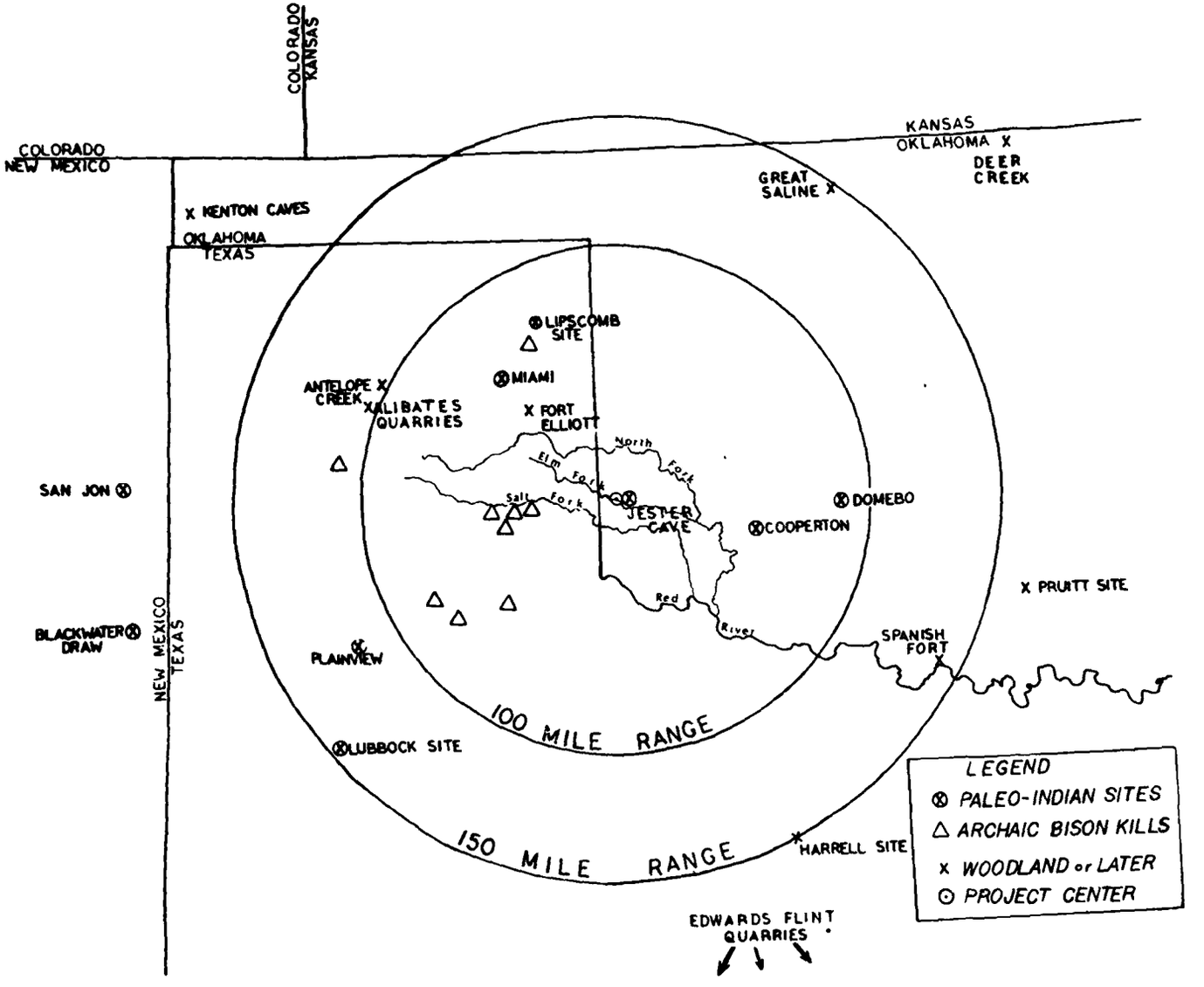

Figure 62: Regional map of survey region with significant sites.

Table 3. Data On All Clear Fork Gouges (in millimeters)

Site Number	Length	Width	Thickness	Weight	Material	Hofman Typology
34-Gr-67	88.2	53.4	31.5	144.4	Ogallala	Variety III
34-Cr-67	67.7	53.2	17.3	72.1	Ogallala	Variety III
34-Gr-77	39.0	36.4	15.1	21.4	Ogallala	Variety III
34-Gr-78	63.2	50.2	25.5	80.6	Ogallala	Variety III
34-Gr-81	60.8	40.7	22.1	61.7	Ogallala	Variety III
34-Gr-81	59.3	56.7	28.2	82.9	Ogallala	Variety (Misc.)
34-Hr-59	57.3	49.0	23.5	60.3	Ogallala	Variety III

A second hypothesis which would explain most of the small lithic scatters that were found in the area is that these sites were originally larger with more material laid down during the cultural occupation and have since been depleted under the effects of severe erosion or deflated down to their present state.

The one exception to the above theory may be site 34-Hr-39 which shows some evidence of longer occupation by prehistoric tribes. The occurrence of lithic material from the surface down to 70 cm. in association with charcoal and bone, argues for more than temporary camps. In any case, this is the primary site surveyed which had any cultural deposit of depth and deserves more attention.

A considerable effort in this report was spent on study of the types of lithic material present at each site and the percentages of each material used at each site. This data is summarized in Table 4. The four sites with the highest percentages of each major lithic type are as follows:

Sites by highest percent of flint type	Og.	P.W.	Qtzt.	Alib.	Tec.	Ed.
Highest %	Gr-75	Gr-96	Gr-93	Gr-89	Gr-85	Gr-74
2nd highest %	Hr-33	Gr-92	Hr-10	Gr-77	Gr-86	Gr-82
3rd highest %	Gr-84	Gr-83	Gr-73	Gr-74	Gr-87	Gr-76
4th highest %	Gr-81	Gr-95	Hr-39	Gr-81	Gr-95	Gr-92

By comparing these high percentages of particular materials with the location of the sites (see map in pocket), several patterns emerge.Sites 5 and 6 (Gr-77 and Gr-74) represent one cluster and sites 15 and 16 (Gr-81 and Gr-82) represent a second cluster of sites with nonlocal material (Alibates and Edwards). Also sites 20 and 21 (Gr-86 and Gr-87) represent a cluster of Tecovas users. These kinds of patterns could well mean these sites were used by well traveled groups in Paleo-Indian or late prehistoric times.

Table 4

PERCENT OF FLINT TYPES BY SITE

(Percent of total number of tools and flakes -- percent of total weight in grams)

Temp. Site No.	Site No.	Ogallala	Pet. Wood	Quartzite	Alibates	Tecovas	Edwards	West Gate	Jasper	Quartz	Granite Sandstone Other	Unknown	Total Number-- Weight in grams
	34-Gr-40	72--80	6-- 6	6-- 8	6-- 4	3-- 0					3-- 1	3-- 1	32--1,307.5
	34-Gr-41	58--79	17-- 5	4-- 9	8-- 4	4-- 0	4-- 0					4-- 2	24--1,169.0
1.	34-Gr-71	57--57	10-- 8	27--33	1.5-- 0	1.5-- 0					1.5-- 2	1.5-- 0	67--5,769
2.	34-Gr-72	62--55	20-- 8	15--34	2-- 0	2-- 2							53--1,262.2
3.	34-Gr-73	33--35	33--21	33--44*									3--28.8
4.	34-Gr-67	55--74	19-- 7	9-- 9	6-- 3	5-- 4	1-- 0	0-- 2			1-- 0	3-- 2	420--7,337.9
5.	34-Gr-97	33--55		33--36*	33-- 9*								3--39.9
6.	34-Gr-74	33--23	17-- 1	8--12	17-- 5*		8-- 7*				8--43	8--10	12--307.7
7.	34-Gr-75	100--100*											5--193
8.	34-Gr-68	51--59	22--22	10--16	5-- 1	9-- 2			1-- 0			2-- 0	99--4,098.8
9.	34-Gr-69	48--72	15-- 7	13--15	4-- 2	17-- 4					2-- 0	1-- 0	153--4,264.1
10.	34-Gr-76	60--82	10-- 3	10--10	10-- 4		10-- 1*						10--402.3
12.	34-Gr-78	64--58	15--15	3--18	12-- 5	6-- 4							33--552.9
13.	34-Gr-79	72--82	13-- 3	9-- 9	4-- 2							2-- 4	53--2,095.7
14.	34-Gr-80	65--64	10--12	10--11	10-- 1							5--11	20--252.8
15.	34-Gr-81	59--84*	9-- 5	3--.5	18-- 5*	9-- 2						3-- 3	34--829.9
16	34-Gr-82	50--52	10-- 5	20--36		10-- 2	10-- 4*						10--246.6
17.	34-Gr-83	54--72	36--26*		9-- 2								11--197.1
18.	34-Gr-84	69--90*	17-- 5	5.5-- 4	4--.5	5.5--.5							54--1,823.6
19.	34-Gr-85	69.5--71	7-- 3	3-- 9	2--.5	17--16*					1--.5		115--814.9
20.	34-Gr-86	35--63	35--19	10-- 8		20--10*							20--232.4
21.	34-Gr-87	54--82	8-- 5	8-- 7		31-- 6*							13--342.1
22.	34-Gr-88	68--63	4--15	16--19	8-- 2	4-- 0							25--863.1
23.	34-Gr-89	20-- 7	20--11	20--10	40--72*								5--34.8
24.	34-Gr-90	70--66		20--29		10-- 5							10--211.0
25.	34-Gr-91	41--87	29-- 4	12--12	6--.5	12-- 2							17--981.8
26.	34-Gr-92	31--22	31--34*	14--35	8-- 2	12-- 5	2-- 1*					2-- 0	51--1,155.6
27.	34-Gr-70	54--69	11-- 4	26--19	3-- 2	5-- 1	0-- 1				1-- 3	0--.1	310--11,079
28.	34-Gr-93	38--23	29--15	15--61*		12-- 1			3-- 0			3-- 0	34--2,345.4
29.	34-Gr-94	21--62	43-- 6	7-- 6		21-- 5		7--20					14--969.9
30.	34-Gr-95	45--51	23--23*	17--15	6-- 4	4-- 7*						4-- 0	47--833.1
31.	34-Gr-96	16--19	53--29*	1--32	2-- 1	2-- 0				2--17		5-- 2	43--1,933.7
	34-Hr-10	31--23	29--17	26--56*		11-- 3				3-- 2			35--2,461.2
	34-Hr-39	50--44	10-- 5	27--44	2-- 1	2-- 1				0-- 0		8-- 5	323--5,488
32.	34-Hr-58	Historic Site - No Flint											
33.	34-Hr-59	81--91*	6-- 3	3-- 4	4-- 1	6-- 1							102--5,873.5
--Isolated Finds		67--78	13-- 9	9--10	6-- 1	3-- 1	1-- 0			1-- 2	1-- 0		114--6,538.5
	Averages	52--60	19--11	13--20	8-- 5	9-- 3	4.5--1.8				1.4--1.8	3.4--2.5	2,347--77,276.4

* Marks the four sites with the highest percent in each lithic type.

When all 36 sites surveyed are examined as to site topography, another pattern emerges. Out of five topographical divisions:

1. Tops of high bluffs ---------- 8%
2. At the base of high bluffs ---------- 19%
3. Tops of high ridges or isolated terraces -- 11%
4. Low terraces overlooking creeks or rivers - 53%
5. Flood plains ---------- 8%

Twice as many sites were found on topography 4 as any of the other topography settings. What also may be represented in these figures is the use of different topography settings according to the season. For example, the No. 2 setting at the base of high bluffs would make a much better winter camp during a storm than No. 4. This data might be evidence that the whole valley was used more in periods of good weather (summer?) than in winter or stormy seasons.

Two separate points should be made about the Archaic material recovered in this survey. First, many artifacts resembling material reported by Leonhardy (1966b) was found which tends to lend weak support to Leonhardy's definition of the Summers Complex. But the Summers Complex is not supported without reservations. Excavated sites which produce Archaic Summers Complex materials in great abundance and with several absolute dates have yet to be reported.

The general area of western Oklahoma has another problem that may not occur as frequently in eastern Oklahoma. Due to the lack of ground cover in many areas of southwestern Oklahoma, the lithic material, especially exotic types like Alibates with its bright colors is extremely easy for amateurs and untrained people to find. The result of this combination of factors may well be that sites here have been heavily skewed in particular types of material and tools still on the surface. The proper solution to both the Summers Complex problem and the surface collection problem has already been suggested by J. Hughes, Leonhardy, Wyckoff, and others; that more excavations of stratified sites with tight controls and absolute dating be performed.

All of the sites discussed except two were evaluated as having low data potential for various reasons and not deserving further mitigation of any kind. For all these sites except Gr-94 and Hr-39, the first 3 objectives listed in the introduction have been performed and logically do not require further comment or an estimate of mitigation (see Table 5).

None of the sites discussed in this survey are considered eligible for nomination to the National Register. Only Hr-39 has the potential of producing data significant enough to be placed on the National Register, but all of the data gathered so far does not qualify it as eligible to the National Register.

If the Area VI Chloride Control project is authorized for construction, there are two basic options which appear possible.

1. The completion of the proposed salt control project with such modifications necessary to avoid any disturbance of the surface of sites Hr-39, and Gr-94, including roads and particularly borrow pits on the sites.

Table 5. Site Characteristics and Recommendations

Temp. Number	Permanent Number	Size/ Acres	Topography Type*	Impact on Site	Work Completed	Recommendations
1.	34-Gr-71	2	4	R,E	CSC	-
2.	34-Gr-72	2	2	E,SS	CSC	-
3.	34-Gr-73	2	1	CT	CSC	-
4.	34-Gr-67	40	4	R,E,Ch,DW,CT	CSC,T,CC	-
5.	34-Gr-77	1/8	4	E,Ch	CSC	-
6.	34-Gr-74	1/2	4	Ch,E,CT	CSC	-
7.	34-Gr-75	1/2	4	Ch,E	CSC	-
8.	34-Gr-68	2	4	Ch,E	CSC,T	-
9.	34-Gr-69	1 1/2	2	Ch,E	CSC,T	-
10.	34-Gr-76	1	2	Ch,E,SS	CSC	-
11.	(Lumped with Gr-68 as one site)					
12.	34-Gr-78	1/2	3	E,R	CSC	-
13.	34-Gr-79	1	4	E	CSC	-
14.	34-Gr-80	1/2	2	E,CT,R	CSC	-
15.	34-Gr-81	1	4	E,R,DW	CSC	-
16.	34-Gr-82	1	4	E,Ch	CSC	-
17.	34-Gr-83	1	3	E,SS	CSC	-
18.	34-Gr-84	1	2	E,Ch,SS	CSC	-
19.	34-Gr-85	2	2	E,Ch	CSC	-
20.	34-Gr-86	1	4	E,Ch	CSC	-
21.	34-Gr-87	1/2	4	E,Ch	CSC	-
22.	34-Gr-88	1/2	3	E,SS	CSC	-
23.	34-Gr-89	1/4	2	E,Ch,CT,R	CSC	-
24.	34-Gr-90	1/8	3	E,Ch	CSC	-
25.	34-Gr-91	1/4	4	E,Ch	CSC	-
26.	34-Gr-92	2	1	R,E,DW	CSC	-
27.	34-Gr-70	3	4	E,SS,Ch	CSC,T	-
28.	34-Gr-93	2	4	E,SS	CSC	-
29.	34-Gr-94	1	4	E,SS	CSC,CC	A/E
30.	34-Gr-95	1/2	5	E,Ch	CSC	-
31.	34-Gr-96	1	4	E,R,Ch,SS	CSC	-
32.	34-Hr-58	1/4	5	R,CT	CSC	-
33.	34-Hr-59	1 1/2	1	SS,E,Ch	CSC	-
Sites Already Recorded	34-Gr-40	1	4	R,E	CSC	-
	34-Gr-41	2	4	R,E	CSC	-
	34-Hr-10	10	4	SS,E,Ch	CSC	-
	34-Hr-39	20	5	E,CT	CSC,CC,T	A/E
Total	36 Sites Surveyed					

CSC -Complete Surface Collection
CC -Controlled Collection
T -Test Excavations
- -No Further Archeological Work
A/E -Avoidance of Site/or/Excavation Required
* -For Topography Types See Text

E -Severe Erosion
R -Road On or Near Site
SS -Steep Slope
Ch -Channeling Erosion
DW -Drilled Well
CT -Cattle Trail on Site

2. The completion of the proposed salt control project preceded by an extensive testing operation supervised on site by a professional archeologist with a minimum of two years experience and a master's degree or better in archeology or anthropology.

In respect to option number two the following minimum mitigation is recommended.

Proposed Minimum Mitigation for 34-Hr-39

Field work and requirements

10 man crew 3 weeks	1200 hours
Archeologist 13 weeks	520 hours
Arch. assistant 6 weeks	240 hours
2 lab. workers 12 weeks	960 hours
Secretary 4 weeks	160 hours
2 vehicles use 4 weeks	320 hours

Miscellaneous expenses

5 carbon-14 tests
Expendible supplies
Pollen or soils mechanics analysis
Curation of materials after project - 3% of salaries and wages
Printing costs for 100 copies of 100 page report

Proposed Minimum Mitigation for 34-Gr-94 - Dugout

Field work and requirements

10 man crew 1 week	400 hours
Archeologist 5 weeks	200 hours
Arch. assistant 2 weeks	80 hours
Lab. worker 5 weeks	200 hours
Secretary 2 weeks	80 hours
1 Vehicle use 2 weeks	80 hours

Miscellaneous expenses

Expendible supplies
Curation of materials after project - 3% of salaries and wages
Printing costs for 100 copies of 50 page report

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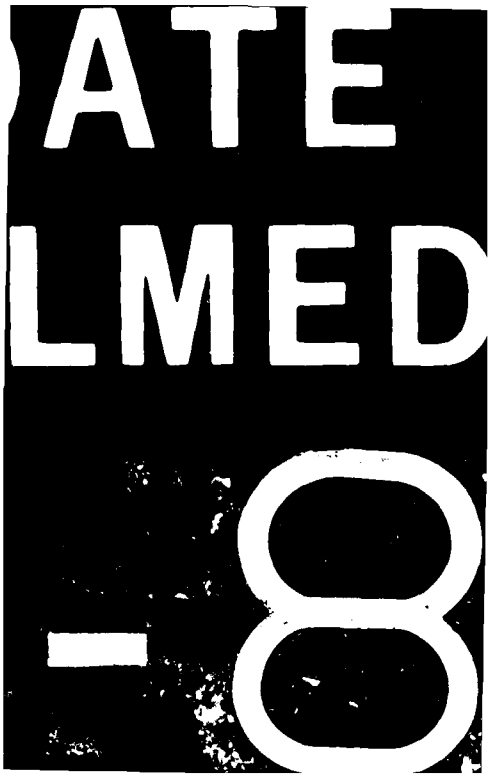
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